THE IRON AGE

A Review of the Hardware, Iron, Machinery and Metal Tra

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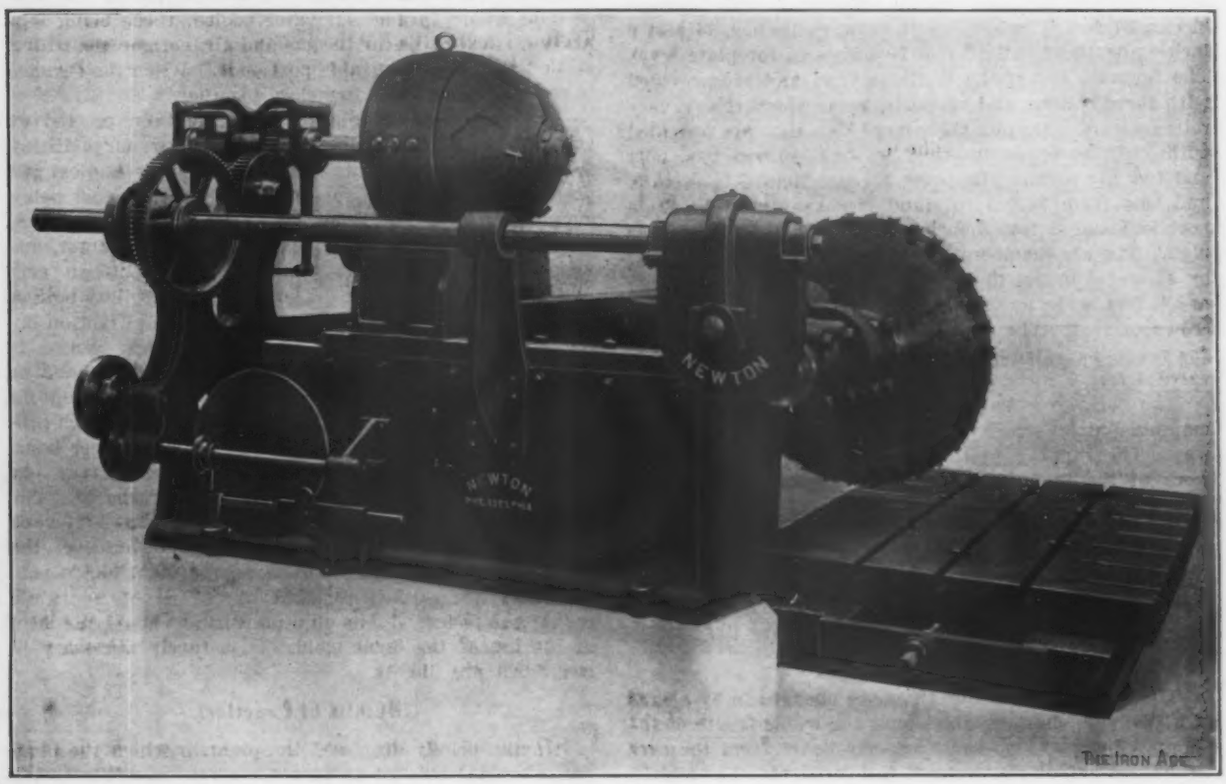
New York, Thursday, March 15, 1906.

The Newton Steel Foundry Cold Saw.

There is perhaps no place where a cold sawing machine is put to more severe use than in a steel foundry. Nearly its entire work is the removing of gates and risers from steel castings, and it is highly desirable that the saw blade be of great cutting capacity and that the machine be conveniently manipulated in order that the work may be done economically and rapidly. A cold sawing machine particularly designed for steel foundry service and built by the Newton Machine Tool Works, Philadelphia, Pa., is shown in the accompanying engraving. As



A Motor Driven Cold Sawing Machine Built for Steel Foundry Uses by the Newton Machine Tool Works, Philadelphia, Pa.

may be seen, it is of a motor driven type and uses an inserted tooth high speed saw blade.

The blade in this machine is driven through powerful spur gears by a worm and worm wheel of steep lead, the wheel being of phosphor bronze and the worm of hardened steel and both running in oil. These parts are supported from the carriage and move with the saw when feeding. The shaft carrying the worm is splined and is driven through spur gears by a 10 horse-power Crocker-Wheeler motor mounted on top of the machine. The same motor operates a quick movement for returning the saw carriage after taking a cut, the power being obtained through a belt from a pulley on the extended armature shaft to the smaller step of a pulley connected with the feeding mechanism. The larger step is belted to a pulley on the same sleeve with the gear driving the splined worm shaft and gives the cutting feeds. Both the regular drive and the quick return are transmitted through friction clutches, both of which may be simultaneously disengaged so that the motor can run continuously when neither movement is in action. As only one clutch may be engaged at a time the saw blade is idle when the quick return is acting. This feature is desirable because it has been found to be best to have the saw blade still when withdrawing it from the cut, inasmuch as it is difficult to clamp steel castings so that a shift or some lateral movement will not frequently occur after the gate or riser is cut off. In such cases were the blade withdrawn while in motion there would be a tendency, due to the changed position, to break out some of the teeth of the saw.

The power feed is variable through a friction disk and shifting driver, the latter being manipulated through the handle shown near the base of the machine. It is usually desirable to make use of this, throwing the friction to its highest speed when the quick return movement is in action. The saw blade on this machine is 40 inches in diameter, and the spindle which carries it is mounted in a ram having 24 inches in and out feed. The capacity covers the cutting off of gate and risers up to 13 inches in diameter. The blade being overhung on the rear side, as viewed in the half-tone, long castings may be placed close to that side when the surplus parts are being cut off, and the ram construction is such that odd shapes of castings may be frequently handled under the ram. The machine is furnished with an independent adjustable table 4 feet wide and 6 feet long, having T slots for clamping work, which is movable at right angles to the saw blade for convenience in setting the work.

In designing this tool the manufacturer has endeavored to give it all the power, strength and rigidity necessary for the satisfactory driving of the modern high speed inserted tooth saw to its full capacity, and it is believed that it will appeal to those having need of a tool of its class.

The Talbot Continuous Steel Process.*

BY G. A. WILSON.

In the autumn of 1903 I had the pleasure of reading before this institute a paper on our practice in fixed open hearth furnaces at Britannia works, Middlesbrough, which I then looked upon as representing the very acme of good practice. I find, in the light of present knowledge, that the continuous steel process permits of the manufacture of steel more readily and more economically than I should have thought possible a short time back. On resigning my post as steel superintendent at Britannia works I took up a similar position with the Cargo Fleet Iron Company, Limited, of Middlesborough, which was then on the eve of starting the first of its 175-ton tilting furnaces, as designed for the carrying out of the Talbot continuous process.

Talbot Furnaces at Cargo Fleet Works.

The steel plant at Cargo Fleet works at present consists of three large tilting furnaces, which have a nominal capacity of 175 tons each but which will in reality at a pinch carry 200 tons of steel. The dimensions of the bath of these furnaces are as follows: Length between blocks, 37 feet 6 inches; width between linings, 14 feet 6 inches; depth of bath, 3 feet 10 inches to foreplate level. The furnaces are of the Wellman type and are provided with three rockers and supports, upon which the furnace rolls forward. Despite their large size they are provided with only three ports—that is, one central gas port and two air ports. The ports are egg shaped in section, and this form I find to stand remarkably well. Each port is about 2 feet 3 inches across by 3 feet 3 inches high. The air chambers are 10 feet wide by 22 feet long by 17 feet 6 inches to crown of roof. The gas chambers are 8 feet wide by 22 feet long by 17 feet 6 inches to crown of roof. The air valve is 4 feet 3 inches square; gas reversing valve 3 feet 6 inches diameter; gas supply valve 4 feet 6 inches diameter.

The furnace is capable of tilting both ways and is manipulated by two hydraulic cylinders in the ordinary way. The tapping platform is attached to the frame work of the furnace and consequently moves with it—a very convenient arrangement. On the charging side the three furnaces are served by two 40-ton overhead electric traveling cranes, which are provided with 20-ton auxiliary lifts. On the tapping side the furnaces are served by two 75-ton overhead electric traveling cranes, which are also supplied with 20-ton auxiliary lifts.

Features of the Plant.

The lime and oxide additions are charged in by means of a Wellman charger, which runs the whole length of the staging and picks up the necessary boxes from the cars on a track running in front of the furnaces. The molten iron is run direct from the blast furnaces to a mixer of about 180 tons' capacity. The mixer is of the ordinary Bessemer type and is kept sufficiently hot by means of four blow pipe nozzles, in which coke oven gas and air are consumed. This arrangement is both cheap and effective and is practically doing the work which is done at some other works in large primary furnaces supplied with regenerators, valves, stacks, &c.

From the mixer the partly desiliconized and desulphurized pig iron is poured into a ladle holding some 25 tons and lifted up and carried along by means of the overhead traveling crane to the front of the furnace on the charging side. It is then tilted and the metal allowed to run slowly into the Talbot furnace through a short runner fixed onto the foreplate of one of the doors. The metal is tapped into a 50-ton steel ladle in the ordinary way by opening the tap hole and tilting the furnace as far as may be desired. It is, of course, easy to regulate the exact quantity that should be cast at one time; and when sufficient steel has been run into the ladle all that is necessary is to tilt the furnace back again into its original position.

Arrangements are made for tapping off the slag whenever desired; and this forms an essential point in a well designed Talbot plant, as one has not only to deal with large quantities of steel but also large quantities of slag, and the days in which we could allow this to run into the pit have long passed. At Cargo Fleet slag can be cast simultaneously from doors Nos. 2 and 4 on the charging side of the furnace. The slag runs into two slag ladles, which carry about 10 tons each and which run on rails between the center stands of the furnace. The slag buggies can be run out to the casting side of the furnace to a point at which the 75-ton crane can pick them up and deal with them.

The furnaces are provided with Talbot movable port ends, which are certainly very convenient. These consist of two movable cages, one at each end of the furnace, which carry the flues or uptakes connecting the chambers with the movable section of the furnaces. These are actuated by means of hydraulic cylinders and have both horizontal and vertical motions. The vertical motion is very slight, being about 3-inch rise, just to prevent friction horizontally when the furnace is tilting; but when repairs have to be made to the blocks or to the uptakes from the chambers they can be drawn back to a distance of several feet from the furnace, so as to allow the bricklayers to work either at the blocks or uptakes.

The whole furnace is water cooled, there being separate vertical chills for the gas and air, both on the tilting section and on the movable port ends. When the furnace is working these chills are close together.

The gas producer plant which has been erected at Cargo Fleet for supplying gas to the three large tilting furnaces consists of a plant of ten Talbot mechanical gas producers. These are automatically fed, the coal being supplied from an overhead bin. As is fairly well known, these producers, which are some 10 feet in diameter, are supplied with a central shaft, provided with an arm which works in the fire. The central shaft has both a vertical and horizontal motion, the horizontal motion being a slow continuous one, while the vertical motion is only used intermittently—say once every half hour or thereabouts. By these two motions the fire is kept in good condition and a very good gas produced. Each producer is capable of gasifying about 1 ton of fuel per hour.

Casting is carried out at Cargo Fleet on the car system, there being no pit in front of the furnaces. The ladle, with from 50 to 60 tons of steel, is lifted by means of the overhead crane to the requisite position over the track upon which the cars carrying the ingot molds run. The cars are pushed forward by means of hydraulic racks; the teemer stands on a platform at about the level of the top of the ingot mold. It is rarely necessary to box down any ingots.

Details of Practice.

Having briefly discussed the plant in which the process is carried out, let us turn for a few moments to the process itself:

Briefly, we are bringing the iron from the mixer in lots of some 20 to 25 tons each, converting this into steel and casting about 50 tons of steel ingots every six hours. To bring this about, the great secret is the proper management of this slag and a sufficiently decarbonized bath when the molten pig iron is run in. Our great aim is always to get a good reaction when the molten metal enters the bath; and if we fail to get this we know that the charge will be a slow one, requiring to be worked down much as an ordinary heat in the ordinary fixed furnace practice. On the other hand, when a good reaction is obtained (and this, with a little experience the first hand can almost always bring about), the carbon is very rapidly and energetically boiled out of the metal, and when the reaction has calmed down the bath will be found to contain not more than about .3 per cent. of carbon.

Some care is required to keep the reaction under control, as if too large a quantity of molten iron is added at a time it is apt to become too violent, when a good deal of slag which would be valuable in the furnace is thrown out on to the staging. With a high silicon iron or with a very gray iron the tendency is to get violent reactions; whereas with a good white basic iron there is very little to be feared on this score.

* From a paper read before the West of Scotland Iron and Steel Institute, January 19, 1906.

Immediately after tapping, as soon as the tap hole has been closed, the requisite amount of iron oxides and lime are added to the furnace by means of the Wellman charger. While these additions are getting molten the necessary repairs to the slag line are made by the furnace hands. I may say here that we find the repairs to be considerably less on these large tilting furnaces than on the ordinary fixed basic furnaces.

As soon as the oxide and lime additions are fairly incorporated in the slag the first ladle of molten iron is brought up from the mixer and cautiously added as described. When this has worked down somewhat more lime and oxides are charged in and the second ladle of metal introduced. There is always far less danger of a violent reaction with the second ladle than with the first. It is usual to run off a fair portion of the slag after the second ladle has worked down somewhat, otherwise an unduly thick slag will accumulate on the surface of the bath, and this tends to keep the heat off the metal for finishing purposes.

When the bath seems about ready tests are taken and analytically examined for carbon, phosphorus and sulphur and when these are found correct the furnace is tapped. No manganese is added in the furnace, but it is all thrown into the ladle in the usual way. It is interesting to note, as showing the unoxidized state of the Talbot bath at tapping, that 25 per cent. less ferro is needed than would be required to give an equal manganese in steel from a fixed furnace working the usual way.

Character of Steel.

As showing the quality of the steel produced I give the analytical details of the first 50 casts. The steel is of excellent quality and has been accepted by Lloyds and other surveyors for shipbuilding:

Analyses of Steel from Talbot Furnaces.

Cast No.		Carbon.	Sulphur.	Phosphorus.	Manganese.
1		0.25	0.034	0.032	0.420
2		0.23	0.032	0.025	0.530
3		0.18	0.024	0.064	0.610
4		0.23	0.041	0.030	0.570
5		0.22	0.021	0.059	0.610
6		0.19	0.050	0.055	0.600
7		0.19	0.046	0.058	0.610
8		0.15	0.049	0.062	0.570
9		0.18	0.024	0.049	0.480
10		0.22	0.044	0.037	0.478
11	Average analysis of metal	0.18	0.037	0.034	0.570
12	direct from blast fur-	0.22	0.032	0.040	0.500
13	naces for first 26 casts.	0.16	0.041	0.025	0.500
14	Phos. 1.50	0.15	0.039	0.020	0.520
15	Sil. 1.25	0.15	0.039	0.049	0.540
16	Sul. 0.10 to 0.15	0.15	0.035	0.037	0.520
17		0.20	0.044	0.013	0.450
18		0.16	0.037	0.058	0.610
19		0.19	0.052	0.040	0.570
20		0.31	0.055	0.055	0.490
21		0.20	0.044	0.054	0.490
22		0.16	0.058	0.021	0.500
23		0.135	0.053	0.034	0.490
24		0.190	0.058	0.035	0.590
25		0.240	0.032	0.052	0.480
26	The mixer was put into	0.140	0.050	0.039	0.570
27	operation from cast 26.	0.150	0.050	0.039	0.570
	Sil. Sul.				
28	1.00 0.046	0.120	0.050	0.020	0.438
29	0.89 0.062	0.135	0.050	0.016	0.410
30	1.12 0.046	0.240	0.036	0.017	0.480
31	0.93 0.047	0.160	0.032	0.021	0.500
32	0.745 0.044	0.160	0.046	0.040	0.520
33	1.07 0.086	0.180	0.061	0.053	0.490
34	1.30 0.062	0.170	0.057	0.060	0.490
35	1.12 0.052	0.170	0.053	0.054	0.480
36	0.896 0.090	0.150	0.040	0.048	0.470
37	1.06 0.086	0.180	0.060	0.038	0.440
38	.. ..	0.155	0.032	0.047	0.460
39	1.19 0.042	0.160	0.040	0.040	0.430
40	0.934 0.070	0.190	0.025	0.027	0.410
41	0.88 0.084	0.170	0.058	0.021	0.410
42	1.17 0.083	0.155	0.059	0.032	0.470
43	1.02 0.084	0.135	0.054	0.016	0.450
44	0.630 0.064	0.135	0.053	0.016	0.450
45	1.00 0.059	0.135	0.040	0.038	0.470
46	0.965 0.046	0.150	0.047	0.023	0.450
47	0.78 0.067	0.170	0.058	0.024	0.480
48	1.23 0.082	0.150	0.055	0.030	0.553
49	1.17 0.096	0.220	0.049	0.050	0.500
50	1.09 0.063	0.220	0.050	0.039	0.480

As a rule the carbon in the steel is required fairly low, from about 0.15 to 0.20; but both higher and lower carbons can readily be obtained, more especially with very soft steel. Hitherto we have not paid very much attention to obtaining a marketable slag, having directed our attention to making a good steel.

The pig iron used is Cleveland forge and at times the sulphur in this is higher than could be wished. Passing such iron through the mixer, however, eliminates some 30 to 50 per cent. of the sulphur, and the remainder is easily dealt with in the steel furnace. There is no doubt a mixer is a great help as an auxiliary to the steel furnace, and our experience at Cargo Fleet shows that the mixer need not be of the expensive description that has recently been adopted by several firms. I note your president in his opening address refers to the use of mixers in connection with steel making from direct metal. I entirely agree with what he says, provided the metal is run from the mixer into a large continuous steel bath, as when run in comparatively small lots into fixed furnaces there is by no means the same advantage obtainable. As regards the future we hope to have our third Talbot furnace working in a few weeks. A cupola plant will have to be erected to supply part of the metal and with this our output should be over 3000 tons per week.

The first charge was made at Cargo Fleet on September 4, 1905, and for the first 12 weeks there were produced 11,574 tons of ingots, or practically 1000 tons per week, with a yield of 105.7 per cent. of steel calculated on the metals charged and with a speed of conversion of 8.4 minutes per ton converted. The fuel consumption has not been quite accurately obtained, owing to gas being used for other purposes; but a near approximation brings it out at 5 cwts. per ton of steel. The tonnage rate for labor has not yet been fixed, so that I do not propose to deal with this point; but it is obvious that as the same number of men are employed as on an ordinary 50-ton basic furnace which would make, say, 450 tons per week, labor must work out considerably less per ton.

In my paper I have shown you that from one large tilting furnace, without expensive scrap and from common molten iron, we are making by the continuous process, and with the help of the ordinary staff of furnacemen only, from 1000 to 1200 tons of steel per week, with a yield of steel up to 108 per cent. on the metals charged into the furnace, and with a fuel consumption of not more than 5 to 6 hundredweights per ton of ingots; and I would ask those of you who have charge of open hearth steel furnaces to compare this with your own practice.

Generating sets are now manufactured by the B. F. Sturtevant Company, Boston, Mass., in a line of 36 sizes, ranging from 3 to 100 kw. direct connected. The vertical cross compound engines were designed to meet the rigid specifications of the United States Navy Department, which in the case of the 100-kw. demand an efficiency of 31 pounds per kilowatt hour. These engines, as well as the vertical and horizontal simple engines, are entirely inclosed, provided with forced lubrication and watershed partitions. The generators are multipolar, capable of carrying 50 per cent. momentary overload and 25 per cent. excess for two hours without sparking or undue heating. The smaller sizes of these sets are particularly adapted to service as boosters.

The Northeastern Railway Company has built at its shops near Darlington, England, a number of 30-ton steel cars for hauling iron ore from the Cleveland mines. These cars are 20 feet long, 9 feet 10 inches high and 8 feet wide, and their load is considerably greater than has been carried by cars with but two axles. There are four bottom doors, composed of plating weighing 12½ pounds per foot, the net area of the door openings being 39 square feet. The wheels have a diameter on tread of 3 feet 10 inches and the wheel base is 10 feet. Including vacuum brake and all fittings the weight of these cars, each of which has a cubic capacity of 680 feet, is 12 tons 12 hundredweight.

Making a Difficult Repair Casting.

An uncommon piece of repair work was recently executed by the H. W. Caldwell & Son Company, Chicago, which required the casting of a half section of an 18-foot band wheel. The whole wheel was originally made by another foundry, but in setting it in place on the crank shaft of the engine one of the halves was accidentally dropped into the pit and broken. It was a planed joint wheel, such as are cast in separate halves or sections. To cast a new half to match the old unbroken one it was necessary to use considerable care in the foundry to secure as nearly as possible the same mixture and mold it under approximately the same conditions in order that an equal diameter and circumference and the same amount of shrinkage might be obtained.

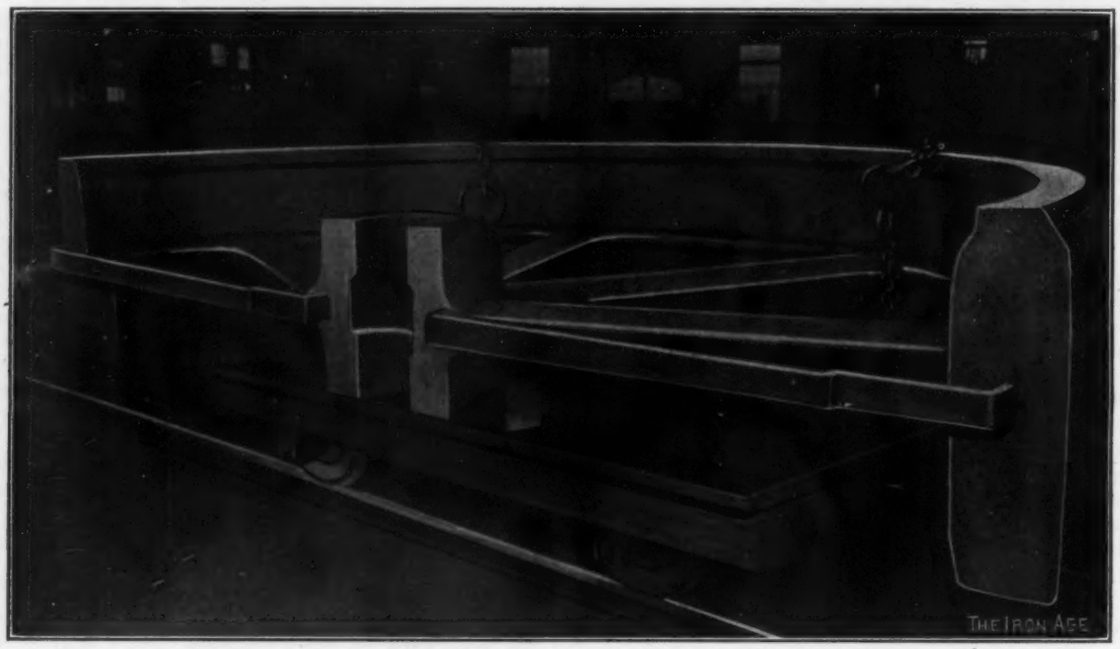


Fig. 1.—A New Half for an 18-Foot Band Wheel Cast by the H. W. Caldwell & Son Company, Chicago.

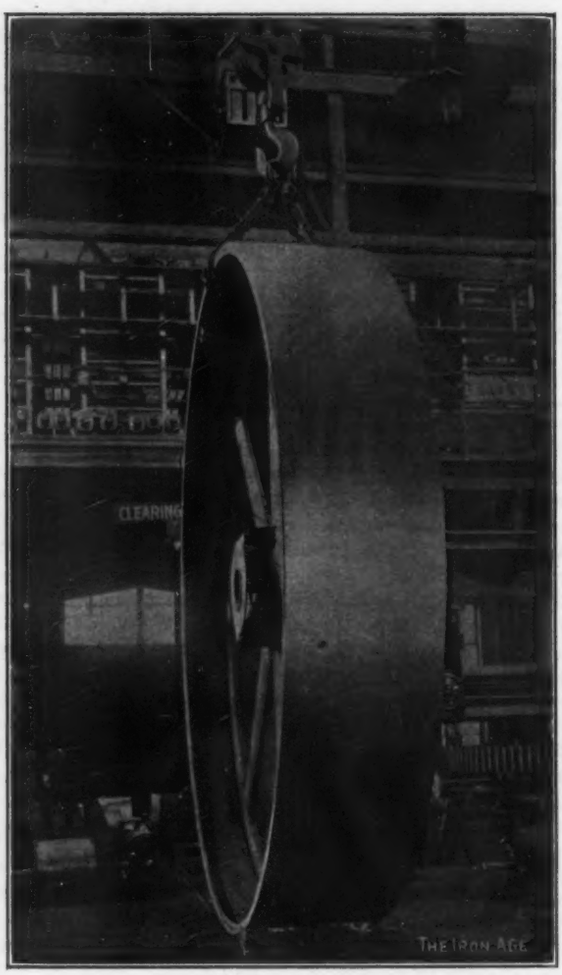


Fig. 2.—The Finished Wheel with the New and Old Halves United.

As there was no datum available from the original maker the first step was the analyzing of a piece of the broken casting, to determine its composition. To duplicate it the furnace was charged with an equivalent mixture and the casting was made in the ordinary way. Fig. 1 shows a view of the casting as it came from the annealing furnace. The new and old halves were then bolted together and placed on a 20-foot boring mill. The new casting was then turned down to the same diameter as the old one and a light finishing cut was taken over the entire wheel. After completing the circumferential face and edges of the rim the hub was bored and faced in the same mill. The finished wheel was then placed on balancing horses and the weight about its axis equalized. The finished wheel is shown in Fig. 2. Its dimensions were, diameter, 18 feet; face, 42 inches, and bore, 15 inches, and the total weight of the wheel 27,806 pounds. It is interesting to know that the new half proved to be only 94 pounds out of balance, being that much lighter than the old half.

Aluminum as an electric transmission line material is at a disadvantage when compared with copper in the matter of deflection from temperature variations where long spans are required. The hight of a support would thus have to be greater for an aluminum line than for copper. The strength, however, need not be so great, for the weight of the aluminum line is only 47 per cent. of that of the copper line for the same resistance, and the tension in the aluminum cables will be but from one-half to one-third as great, depending upon the temperature. Where there are bends in the line or each pole is expected to withstand unbalanced loads, due to the breaking of one or more wires, the lesser weight and tension on the aluminum cables offsets the increased hight required in the supports.

At the Rombach Works, Rombach, Lorraine, gas engines installed by the Nürnberg for furnishing blast for Bessemer converters have been in satisfactory operation since January and are spoken of as the first gas engines employed in this way. At 90 revolutions per minute 29,800 cubic feet of air is delivered.

Molding Sand.*

BY H. E. FIELD, PITTSBURGH.

A review of current literature on molding sand brings to my mind an experience some ten years ago. I then pursued a like line of research on the subject of cast iron. The results were as follows: One authority stated that silicon softened cast iron, another that silicon hardened cast iron; one that sulphur was the most injurious element in cast iron, another that sulphur was never present in sufficient quantity to do any harm; one that phosphorus increased shrinkage, another that phosphorus decreased shrinkage; one that manganese hardened cast iron, another that manganese softened cast iron; one that cast iron gained in carbon in passing through a cupola, and another that cast iron lost carbon in passing through a cupola. Since that time all of those apparent contradictions in regard to cast iron have been explained.

A similar contradiction now exists in the literature in reference to molding sand. This is partly due to a confusion in terms and partly to the marked difference of opinion as to what constitutes a molding sand. I shall endeavor to explain away this confusion in terms, but it is not practical to give definite specifications for molding sand, on account of the great variety of work and the different methods of mixing sand for the same work. I wish to make it clear therefore at the beginning of this paper that I am not attempting to lay down a set of standards for the chemical or mechanical analysis of sand. The day for that may come, and when it does the sand question will be much simplified.

If we would improve molding sand or reduce the cost we must have a thorough understanding of what would constitute a model molding sand. We can then intelligently select the materials which nature has placed at our disposal and combine them so as to approach a standard, for I doubt if there is a founder present who can say that he has even come near to perfection in quality and economy in the molding sand which he uses.

We are continually told that the good molding sand of the old days can no longer be obtained and that the present supply is fast disappearing. If this is true it behooves us to gain a knowledge of what is necessary to make up a good molding sand, so that when nature's supply is exhausted we can prepare a satisfactory substitute from her abundant supply of constituent materials. Let us consider the composition of nature's molding sand with this in view.

Composition of Molding Sand.

Molding sand is made up of two distinct and necessary components: First, silica in the free state, and, second, silicate of alumina. The free silica gives grain, refractoriness, porosity and low shrinkage to the sand, while the silicate of alumina furnishes bond. Free silica would be useless without the silicate of alumina, as it would not hold together. Silicate of alumina would be worthless without free silica, as it would not have sufficient porosity and would have too great a shrinkage. A confusion exists in the use of the word "silica" in respect to sand, which I shall endeavor to avoid by designating the silica existing in the free state—quartz silica.

There are several other substances present in all sand. These impurities are not at all desirable and are present from necessity rather than from choice. Quartz silica and clay in correct proportions can constitute a good molding sand without the presence of any other substance.

We will consider the individual characteristics of the constituents which make up a molding sand, for the correct combination of these properties determines the quality and grade of the sand. A knowledge of the effect of the impurities allows us to determine to what extent they may be present in a given sand and still do no harm.

Ingredients of Molding Sand.

Quartz silica, clay, iron oxide, lime and feldspar are the principal ingredients of molding sand.

Quartz Silica.—Pure quartz, or silicon dioxide, consists of 46.67 per cent. silicon and 53.33 per cent. oxygen. It is very hard, fuses at a high temperature, has no cleavage and when pure is white. It is, however, generally colored by some oxide of iron. Its fusibility is affected by the amount of impurities present. Quartz is the chief nonshrinkage element in molding sand. It has, however, no bonding properties. The shape of its particles affects the strength of the sand, but they have no strength in themselves, as quartz is absolutely nonplastic. The size of the quartz grains determines the grade of the sand. The percentage best suited for a sand can only be determined by the kind of work for which it is used. The quartz silica should be kept as high as possible, on account of its heat resisting power, its tendency toward porosity and its low shrinkage.

Bond or Clay.—The bond of a molding sand is a clay product. Pure clay or kaolinite is a hydrated silicate of alumina—that is, a silicate of alumina containing water of combination. The exact composition of pure clay is silicon dioxide, or silica, 46.4 per cent.; alumina, 39.7 per cent.; water, 13.9 per cent. It is this 13.9 per cent. of combined water which gives the plastic properties to the clay. The bond of a molding sand is not pure clay, but is generally mixed with impurities which weaken its binding power. Clay is formed by the decomposition of feldspars. These are rocks containing silicate of alumina together with silicates of the alkalies. The clay acts as a binder for the sand and holds the refractory quartz silica together. The purity and plasticity of the clay determine the amount necessary to give a sand its correct bonding strength. The clay when pure is very refractory, and it is fallacy to think that because there is a large proportion of bond in a sand it is low in refractory qualities. A high percentage of clay in a sand destroys its porosity and causes high shrinkage and consequently cracks. A sand should be chosen with as low a clay content as is consistent with shop conditions. In foundries where a large percentage of old sand is used it is absolutely necessary to use a new sand containing a high percentage of bond. This is not conducive to the best results. There are, however, certain classes of work the appearance of which must be sacrificed to cheapness of material, and such conditions require that a large amount of old sand be used in the facings. When a lower proportion of old sand is used a new sand with less bond and consequently higher quartz silica will give a more porous facing.

Feldspar.—Feldspars are silicates of alumina combined with silicates of the alkalies. These are generally present in small amounts in molding sand, but they should be kept as low as possible, on account of their fusibility, as they tend to flux the rest of the sand and bind it together.

Oxide of Iron.—Oxide of iron is present in all molding sand, giving it its reddish color. It may be united with the bond as an impurity, or it may form a part of the quartz silica. In either case it lowers the fusing point. The iron comes into the sand either from the original rocks from which the sand was formed or from water containing iron which has trickled through the sand.

Lime.—Lime is sometimes present in molding sand. It makes the sand fusible and liable to crack and crumble in the mold. It may come from the water which has aided in the decomposition of the rocks during the formation of the sand.

Analysis of Molding Sand.

The ultimate analysis of a good molding sand will give results within the following limits:

	Per cent.
Total silica	75 to 85
Alumina	7 to 10
Lime, below	2
Alkalies, below	0.5
Oxide of iron, below	6

The total percentage of iron oxide, lime and alkalies or the total fluxing agencies should not ordinarily exceed 7 per cent. in one sample. In a high grade molding sand used for heavy work they should not exceed 5 to 6 per cent.

A sand analyzed by the rational method should give a quartz silica of from 60 to 70 per cent., a clay substance

* From a paper read before the Pittsburgh Foundrymen's Association March 5. Mr. Field is chemist of Mackintosh, Hemphill & Co.

of from 20 to 30 per cent., with a feldspar below 10 per cent. If the iron was determined separately and subtracted from the clay substance with which it is included by this method we should have a fair indication of the properties of a molding sand, as far as its refractoriness is concerned. The strength is so dependent upon the purity and condition of the clay that it cannot be accurately gauged by any analysis.

Two molding sands, one a so-called strong sand and the other a rather sharp sand, both of which would be classed as a No. 4, give the following results by ultimate and rational analysis:

Sharp Molding Sand.

Ultimate analysis.	Per cent.	Rational analysis.	Per cent.
Silica	86.66	Quartz silica	67.85
Alumina	9.30	Clay substance including iron oxide	22.03
Iron oxide	4.53	Clay substance excluding iron oxide	17.50
		Feldspar	10.12

Strong Molding Sand.

Ultimate analysis.	Per cent.	Rational analysis.	Per cent.
Silica	77.22	Quartz silica	64.66
Alumina	9.26	Clay substance including iron oxide	28.06
Iron oxide	5.56	Clay substance excluding iron oxide	24.50
		Feldspar	7.28

Refractoriness.

The impurities which impregnate a molding sand greatly reduce its refractoriness. The sodium and potassium salts in the form of feldspars and mica are constituents of all clays to a greater or less extent and consequently form a part of all molding sands. These alkalies, fusing at a low temperature, may bind the rest of the substances into a hard mass. Iron oxide also increases the fusibility, as does lime, which is occasionally present. This latter is most harmful when present as a carbonate, as a gas would be given off at a high heat which would prove detrimental to the mold. The size of the grain of a sand may affect its refractoriness. Several experts on clays have demonstrated that under certain conditions the fusing point of the clay is determined by the size of the grain. It is probable that this holds good in regard to a molding sand, the larger grained sand having a higher fusing point.

Porosity.

Some sands are naturally porous, while others are very impervious to gas and moisture. The porosity of a sand determines the amount of venting necessary. Some sands must be vented very freely for all grades of work, while with others the use of a vent rod is hardly necessary. There are four factors which determine porosity: First, the proportion of quartz silica to the bond; second, the size of the quartz silica particles; third, the shape of the quartz silica particles; fourth, the condition of the bond. Generally speaking, the higher the proportion of the quartz silica the greater will be the porosity of the sand. The larger the quartz particles the more porous will the sand be. It will be apparent, however, that the size is limited, from the fact that a sand cannot be too coarse and still give a finish to the casting. The particles should therefore be kept as large as possible and still produce the desired effect as to finish. The porosity is also affected by the shape of the quartz silica particles. Irregular crystalline structures with sharp edges and corners will leave greater spaces between the particles than will regular shaped particles with smooth surfaces, which are apt to fit closely together and thus prevent a free passage of gas or air. The less the proportion of bond used, and still have sufficient binding power in the sand, the greater will be the porosity. It follows therefore that the stronger the bond the less the quantity necessary to produce the same results, consequently the sand having the strongest bond requires the lowest percentage of bond. The tendency of clay to bake together and destroy the porosity of the sand and its tendency to crack, due to excessive shrinkage when drying, render the presence of a large amount of clay bond objectionable. It is very necessary that a sand be chosen with a low percentage of strong bond rather than a large percentage of weak bond.

Strength.

The strength of a molding sand determines its adaptability for different kinds of work. Some castings may be made with sand having comparatively little strength, while for others a strong sand is absolutely necessary. The amount of strength necessary is somewhat dependent upon shop practice. The methods of molding, running, venting and mixing of the sand must all be considered in determining the proper strength of a sand for a given class of work. The practice of using flour, molasses or clay wash in mixing up facing, together with the proportion of coal dust and old sand used, is also an important factor to be considered in the choice of a sand. In foundries where nailing is generally resorted to a weaker sand may be used than where nails are not used. A good mechanical mixer which intimately surrounds each particle of old sand with particles of new sand, rather than putting the old and new sand together in chunks, also permits the use of a sharper sand. Where flour or molasses is used or where the proportion of old sand to new sand is comparatively small the use of a sharp sand is possible.

The strength of a sand depends upon three conditions: First, the proportion of bond; second, the strength of the bond, and, third, the shape of the quartz silica particles.

Size of Grain.

The grade of a molding sand is determined by its grain. The finer grained sands are used for the lighter work. Sands are graded and sold by numbers, based upon the size of the grain.

A sand should be as fine grained as possible and still satisfactorily fill the other requirements of a molding sand. This is due to the fact that the finer grained sand will give a better surface to the casting. The grain of the sand is determined largely by the grain of the original rock from which the sand was formed. The fineness of the sand is obtained quantitatively by the use of a series of sieves. Of these, 100, 80, 60, 40 and 20 mesh are used. A weighed amount of the dried sand is placed in the 100-mesh sieve, which is shaken for a definite time, say, one minute. The siftings are carefully weighed and the weight recorded. The 80, 60, 40 and 20 mesh sieves are used in the same way. These separate weighings are multiplied by the number of the mesh of the sieve. There is a certain loss due to dust flying, &c., which is found by subtracting the total of the weights obtained from the original weight. This loss is multiplied by the average mesh of the sieves, which is 60. The sum of the products of the weights obtained by the number of the sieves divided by 100 constitutes what is known as the degree of fineness of the sand. This method is quite unsatisfactory in many ways, as all sands of the same degree of fineness do not have the same physical effects when used as a molding sand. This is due to the fact that the proportion of sand which passes through each sieve has an important bearing upon the quality of the sand. A sand whose particles are all small but of uniform size will give better results than one with a combination of large and small grains which might be of the same degree of fineness when judged by the standard sieves.

It is never advisable to judge of the fineness of a sand by its appearance, for a comparatively few large particles will give the whole sand the appearance of being coarse, while in reality it may be very fine when judged by the standard sieves.

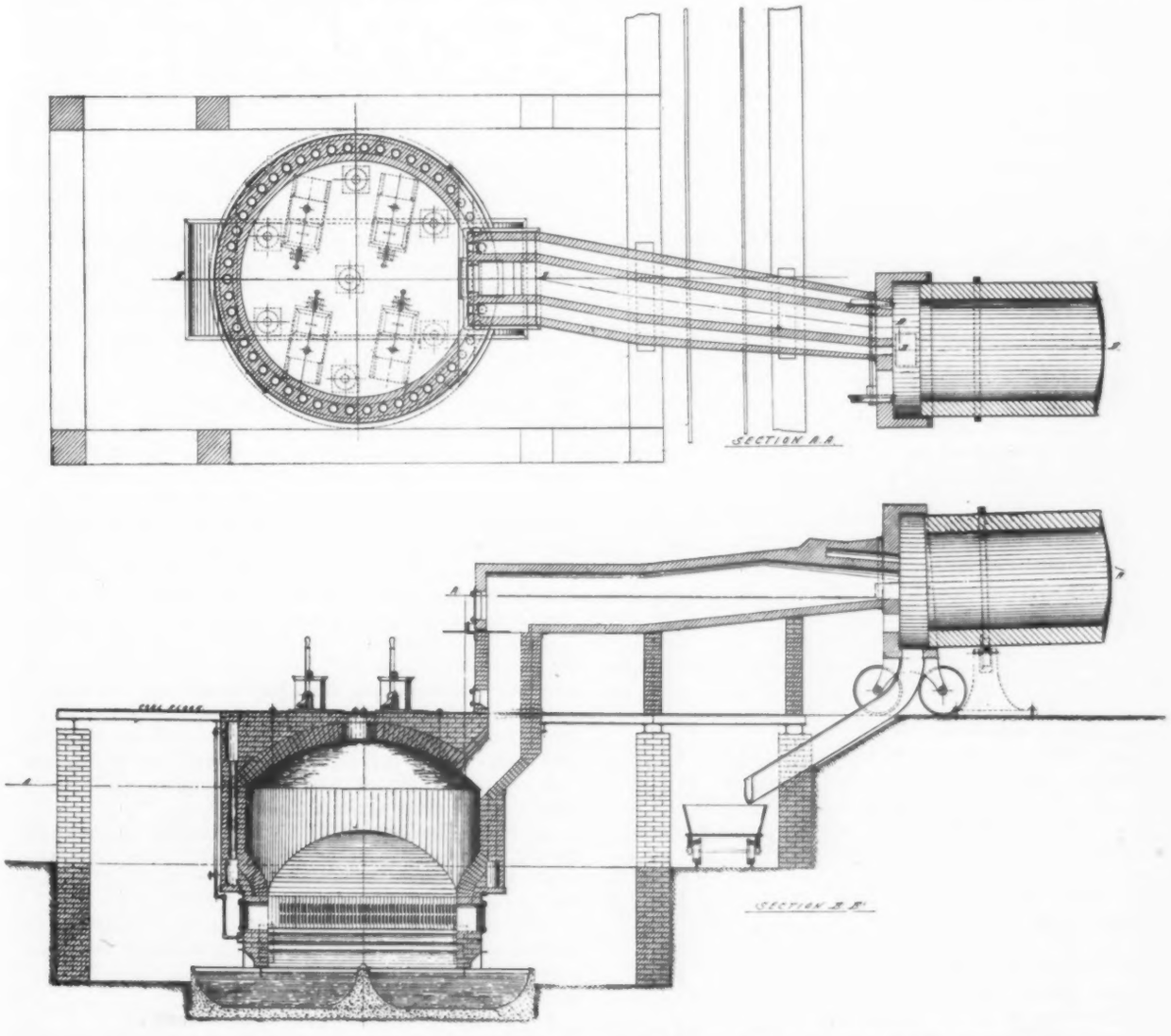
Conclusion.

We have looked at molding sand from two viewpoints: First, as a study of the materials which go to make up a molding sand, and, second, as a study of the properties which are necessary and most desirable in a molding sand. A thorough understanding of the principles considered should aid us in intelligently selecting the best sand for our individual use.

Let me remind you that what proves to be a good sand in one foundry may prove just the opposite under the differing conditions of another. It is with this fact strongly in mind that I give you general information rather than specific data which might apply to one set of conditions. Any future improvement in the quality of molding sand will come from an intelligent interpretation of the principles which we have studied to-night.

Producer Gas in Portland Cement Manufacture.

In the making of Portland cement the most important step is the burning of the crushed raw material to expel moisture and volatile matter and give the material an affinity for water, upon which its cementing properties depend. The calcining or burning process yields a fused product known as Portland cement clinker, which after being ground and sifted forms the finished cement, ready for the market. For the burning a very high temperature is required, which is generally obtained by the combustion of finely powdered coal with air under pressure. Now a new system has been introduced by William Swindell & Brothers, German National Bank Building, Pittsburgh, Pa., in which producer gas is used as the fuel in place of the powdered coal. It dispenses with an extensive power plant equipment for pulverizing and drying the coal and also claims a large saving in operating expense.



Plan and Elevation Sections of a Swindell Gas Producer in Connection with a Portland Cement Rotary Kiln.

The system has already been applied to six rotary kilns at the plant of the Diamond Portland Cement Company, Middle Branch, Ohio, the first kiln being installed one year ago. These kilns are 6 feet in diameter by 60 feet long. On tests made the output has been 240 barrels of 380 pounds to the barrel in 24 hours on a fuel consumption of 110 pounds of coal per barrel.

The system employs a Swindell gas producer of special design for preheating the air as well as supplying the gas, which is connected with the kiln, as shown in the accompanying line drawings. The upper view is a plan and horizontal section on the line A—A of the lower view, taken through the gas and air flues of the combustion burner up to the entrance to the kiln. Only a small part of one end of the kiln may be seen in both views. The lower view is a vertical section on the line B—B of the upper view, showing the gas producer, combustion burner and a part of the kiln near the outlet end. This view also shows the handling facilities. The material as it is discharged from the rotary kiln is passed through a chute to a cement car, in which it is transferred to the cement mills. At the left may be seen the car floor over which the coal is brought to the top of the producer. The consumed content of the producer is removed at the bottom through a water seal, as in the standard Swindell apparatus.

An advantage of this system is that any low grade of coal can be used, while the best grades, free from sulphur, are now required when powdered coal is burned directly, and the "nose ring" being eliminated, the troubles associated with it are avoided. As no ash enters the kilns the product is reasonably considered to be of better quality. Other strong points of the new system, mentioned by the builders, are simplicity in operation, increased output, a saving in fuel and labor and applicability to present kilns at a moderate cost.

The builders announce the receipt of a contract from the Art Portland Cement Company for the installation of this system in its new plant at Kimmel, Ind., and a number of Michigan and Lehigh Valley companies contemplate adopting it.

An organization is stated to have been formed in Rochester, N. Y., under the name of the International Congress of Inventors, to endeavor to secure reforms in patent laws and freedom from "unlawful exactions." George F. Gallagher has been elected president. Members will be divided into two classes, separating those who have taken out patents from those who have not.

Development of Large Gas Engines.

Under the title "The Prime Mover of the Future" C. E. Sargent presented a paper before the December meeting of the Western Society of Engineers at Chicago. At the same meeting H. Freyn of Cleveland went at length into a discussion of the cost of operating a power station from blast furnace waste gases. A full synopsis of the latter paper was given in *The Iron Age* of December 28, 1905. From Mr. Sargent's paper we make extracts below from that portion discussing generally the gas engine of large powers and the question of its efficiency:

A Comparison of Gas and Steam Engines.

The economy of the internal combustion engine has been recognized from its inception. Both the theoretical and practical efficiency of this type of prime mover is from two to five times greater than that of the average externally fired heat engine. The smallest gas engines have a thermal efficiency from 20 to 24 per cent., while the largest steam engine, with all modern refinements known to the art, does remarkably well to turn into work 12 per cent. of the heat supplied to the furnace under normal conditions. For well-known reasons the thermal efficiency of steam engines increases with the cylinder volume, but although this increased efficiency is not so apparent in internal combustion engines, a comparison of the thermal efficiency of an ordinary gas engine with the largest and most economical engine propelled by steam, while perfectly fair to both types, still shows 100 per cent. in favor of the internally fired prime mover.

A plant recently tested by the writer, in which producer gas from anthracite culm was used, showed the cost of fuel per horse-power hour to be about 1.5 mills. By selling the by-products of the bituminous gas producers at the market price, a recent writer in *Power* claims that power from gas engines can be generated 14 per cent. cheaper than from waterfalls.

As the efficiency of the steam plant depends largely on the rapid transmission of heat through boiler walls, and the efficiency of the gas engine on our ability to prevent heat from passing through, the gas engine cylinder can be very much thicker and stronger than the boiler shell, and while the pressure during rapid combustion exceeds the pressure usually carried in the steam boiler, accidents from exploding cylinders are almost unknown, and accidental gas explosions doing considerable damage very rare.

The first cost of a large gas engine plant, including producers, coal handling apparatus, piping, scrubbers, cleaners, building, compressor and engines, is not far from that of a steam plant complete, including boilers, engines, pumps, condensers, chimney, piping and all accessories, so we can assume the first cost the same in each case. As great pressure are not maintained in gas engine installations as they are in boiler plants, the depreciation from internal strains and corrosion should be considerably less. Gas engines do not wear out any quicker, nor do they need any more repairs than steam engines. Gas producers are long lived, the apparatus requiring but little attention and few repairs. The Erie Railroad has had two 200-horse-power producers in operation at Jersey City for seven years and the fire in one has never been out. Imagine the condition of a boiler after such a run. Although the cost of operation, including oil, waste, packing, purgers and labor, would no doubt be less for the gas engine installation than for steam, no claims for savings are made on this account.

Stand-by losses are much less in the internal combustion engine plant if run intermittently or if part of the equipment is held in reserve for immediate service. The gas holder with the producer provides for the peak of the load, even though the producer is run at a uniform rate. With sufficient capacity of holder the gas producer may be run with a uniform output for every hour out of 24, though the engine load vary through the widest possible range, and running under such conditions there are practically no losses from radiation or leakage, as would exist in a boiler plant under pressure.

The California Gas & Electric Corporation, which normally gets its power from waterfalls 200 miles away, carries a gasometer full of cold gas always in reserve for use in gas engine units should the long distance power fail.

American Manufacturers Have Not Kept Pace.

When compressed air is available, and all large units use this medium, gas engines of any size can be started and can take the full load in two minutes' time, as no warming up or cylinder draining is necessary. The waste heat, about 70 per cent. of the heat supplied, can be used for heating, and a higher temperature can be maintained than with the heat from a steam engine exhaust. If the internal combustion engine has so many advantages over steam, why, then, has it not had greater development? Why are we not using gas engines in our large power plants? Why are we using 40,000 British thermal units instead of 10,000 British thermal units in generating a brake horse-power? Why are we burning 400 cubic feet of waste gases under our boilers to evaporate sufficient water for a horse-power hour, when 100 cubic feet burned behind the piston would do the same work? Simply because the American manufacturers have not kept pace with the development of the gas engine as a prime mover.

Five years ago when Henry Wehrum, who has probably done more to introduce the gas engine for power for steel mill work in the United States than any other man, wanted 1000 and 2000 horse-power gas engines for the Lackawanna Steel Company's plant at Buffalo there was practically but one engine obtainable and that of foreign make. A few months ago, when the Carnegie company wanted engines of the same size for the Edgar Thomson Works, twelve proposals were received from American manufacturers.

While the Europeans, in order to manufacture at a profit, on account of the high price of fuel, have been driven to the gas engine for power, the largest internal combustion engines ever made are of home product. It is said that a representative of the United States Steel Corporation went to Europe to investigate the gas engine for steel mill work. After visiting several plants which were in successful operation he said that they worked very nicely for small engines, but he would like to see the largest engine ever built, whereupon he was advised to go home and see the 4500-horse-power gas engine built by the Snow Steam Pump Works. This company has running and is having installed 25 internal combustion engines, having a total capacity of 48,000 horse-power. The largest engine ever built, a twin tandem 52 x 60 inch, 5400 brake horse-power, is now being erected for the California Gas & Electric Corporation, and three others of the same size will follow.

The De La Vergne Machine Company have built nearly 50,000 horse-power of two and four cycle gas engines and have 40,000 horse-power installed in the Lackawanna steel plant at Buffalo, N. Y.

The Westinghouse Company is installing engines of 2000 horse-power, and at least half a dozen manufacturers in the United States will take contracts for any size.

Expiration of the Otto Patents.

Such has been the growth of the internal combustion engine since 1900, yet the beginning of the present gas engine era, in the United States at least, dates from the expiration in 1890 of the fundamental four-cycle patent of Dr. Otto. When it was found that the by-products of the refinery, gasoline and distillate, were available for fuel and the fundamental patent had expired the era of the internal combustion engine began to dawn. Manufacturers who had been experimenting with engines of the two-cycle and Brayton type began to build engines of the Otto cycle, and to-day there are upwards of 500 manufacturers of gas engines in the United States alone. The largest gas engine exhibited at the World's Columbian Exposition, 13 years ago, was of only 35 horse-power. The opening of natural gas wells and the invention of practical producers have provided a cheap fuel for the internal combustion engine, and the utilization of a by-product of the coke ovens and blast furnaces —an excellent gas engine fuel—have given the present impetus to gas engine manufacturers.

While the work done by the gas engine required no niceties of regulation, like driving a dynamo or textile machinery, a single cylinder engine with an impetus or blow when loaded every second revolution and when running light, once in a while, was a satisfactory source of power, but with the necessity of a better turning moment and better governing more cylinders were added, thereby increasing the impulses per revolution, or the admission was throttled, reducing instead of the number of explosions the mean effective pressure of each impulse.

As the highest possible compression without danger of premature ignition is conducive to the highest efficiency, the hit-and-miss method of governing is a more economical method than reducing the charge, but the advisability of a close regulation and uniform rotation makes the latter method imperative.

There are three dispositions of the heat in the fuel which goes into a gas engine cylinder: Part of it, usually about 25 per cent., goes into work, about 40 per cent. into the water jacket and 35 per cent. into the exhaust, radiation, &c. Now, if we can reduce the amount which is wasted we of course increase the percentage turned into work; the amount going into the water jacket depends, other things being equal, on the amount of surface exposed during inflammation. The higher the compression the less surface surrounding the unit of compressed charge, therefore less heat goes into the work. The Lenoir engine, firing at atmospheric pressure, required nearly 100 cubic feet of gas per brake horse-power hour, while with a compression of five atmospheres an engine of the same horse-power will do the same work on 20 cubic feet of gas.

Double Acting Gas Engines.

As the exhaust stroke of a four-cycle single-acting engine has no compression to bring to rest the reciprocating parts, and as a triple or quadruple crank is not only expensive to build and maintain in alignment, but as the work on one crank must be transmitted through other cranks, there arose a demand, in the minds at least of engineers, for a double-acting gas engine, which, if made tandem, even with the four-cycle, would give not only an impulse for every stroke, or twice during a revolution, but the reciprocating parts would be brought to rest by the compression indigenous to each stroke.

A 60 horse-power engine embodying these features, designed in 1897, was to my knowledge the first successful double-acting engine ever built, though Dick, Kerr & Co. of Kilmarnock, Scotland, had built a few, both four and six cycle tandem engines, two of which had a brief existence in a central lighting station at the corner of Clark and Lake streets, Chicago, in '95 or '96.

At the Paris Exposition in 1900 a 1000 horse-power single-acting single-cylinder Cockerill engine was shown, but the double-acting tandem engines now building by most European and many American manufacturers were conspicuous by their absence. With a tandem construction, with a single crank we can get as many impulses as with a single cylinder steam engine, and with a twin tandem as many impulses as with a cross compound engine. With this type, approaching as it does the steam engine design, the driving of multiphase generators in parallel is readily accomplished.

Compression of the Gas.

It has been previously stated that the higher the compression within the limits of the pressure necessary for premature ignition the greater the efficiency, but the kind of fuel governs the degree and the compression necessary to ignite kerosene vapor, though the latter is not so volatile as gasoline, will not cause the latter to burn. Natural gas can be compressed to 150 pounds, absolute alcohol vapor to 190 pounds and blast furnace gas to 210 pounds and still require an electric spark to start inflammation.

The other loss of heat in a gas engine, besides that which is transmitted to the water jacket, is the heat which goes out with the exhaust. When a cylinder full of gas and air is compressed and ignited the chemical action generates an intense heat; the gases expand 1-490 of their volume for every degree of Fahrenheit, and the chemical action, even with a proper mixture, is not instantaneous and often there is flame coming out with the exhaust.

If a full cylinder of combustible mixture is compressed from atmospheric pressure and temperature and heated further by chemical action, then when the volume is constant the pressure is increased, and the release of this pressure when the exhaust valve opens causes the familiar "sea lion bark," always associated with the exhaust of a gas engine. This is the second loss of the internal combustion engine, and when we consider that from 35 to 40 per cent. of the heat is wasted in this way, is it any wonder that engineers have tried to minimize this loss? We all know the inefficiency of the direct-acting steam pump and the gain by a more complete expansion, even though we get a lower mean effective pressure and consequently less power from the same cylinders. To utilize the heat and pressure in the exhaust compound gas engines have been suggested, tried and in some cases shown an increased efficiency.

If steam were a perfect gas, void of cylinder condensation, an early cut-off in a single expansion cylinder would give as many expansions and as good economy as we get in the compound engine. The working fluid of an internal combustion engine is practically a perfect gas, therefore the efficiency of this type of prime mover may be increased if we can expand the working charge to a greater volume than is compressed.

[Mr. Sargent then presented in detail descriptions and illustrations of various types of large gas engines.—EDITOR.]

Economies in Gas Engine and Gas Plant.

As noted above, a paper on "Power from Blast Furnace Gas" was presented at the same meeting by H. Freyn of the gas engine department of the Wellman-Seaver-Morgan Company, Cleveland. There was a discussion on the papers of Messrs. Sargent and Freyn. In reply to the question whether, in a plant running with producer gas, the economy was in the gas engine and gas plant or all in the engine, Mr. Freyn said:

"Both in the gas engine and gas plant, because the gas producer will give as much as 75 to 80 per cent. efficiency, while the average efficiency of the boiler plant is but 65 to 70 per cent. As far as the engine itself is concerned it must be borne in mind that a very economical steam engine, operating with superheated steam having a temperature of over 580 degrees F. at the engine stop valve, consumes 9.49 pounds of steam per indicated horse-power per hour, corresponding to 12,318 British thermal units per indicated horse-power per hour. At a mechanical efficency of 88 per cent. one brake horse-power hour was obtained on 14,000 British thermal units. A modern gas engine will easily produce one brake horse-power hour on 9000 British thermal units.

"I understand from the producer people that the cost of maintenance of a Mond gas producer, for instance, is less than the cost of maintenance of a corresponding boiler plant. A boiler plant, especially an efficient one, requires skilled men to operate it and the necessary appliances, such as feed pumps, superheaters, stokers, &c., and also requires considerable attendance. A producer plant requires but little work, and most of the men can be unskilled laborers. As far as the operation of the gas engine is concerned we hear quite often the objection that a gas engine requires operating engineers who must have a special experience in gas engine work. This is most decidedly not the case. In a plant in Germany, where gas engines of an aggregate capacity of 5000 horse-power were installed several years ago, the men operating the engines were common laborers. My company has just built a 500 horse-power Sargent gas engine for its works at Akron, Ohio, and the erecting engineer, who had never seen a gas engine before, has been running this engine now for several months, and I would now trust that man with any gas engine."

Results at the Lackawanna Plant.

Referring to the two-cycle Koerting engines in use for blowing at the Buffalo plant of the Lackawanna Steel Company, Mr. Freyn said:

"I learned from the chief engineer of the company, who has charge of the gas engine plant, that it is run-

ning excellently. I was very much interested to know the cost of operation of this power plant, but the chief engineer told me that he would not dare to comply with my request, but that the cost was away below the best steam engine practice. Later on I understood from other authorities that the cost was about $25 per horse-power per year. I would mention that the Lackawanna gas engine plant is not running on full load, but somewhere between three-quarters and one-half load. At full load the figure which I found in my calculation for the operating cost of a 10,000 horse-power power plant was $17.88. For three-quarters load of the power plant I found the operating cost to be in the neighborhood of $22.59. At one-half load capacity the cost would be $34.71. It will be seen that this result of actual experience in a power plant fits in very nicely between the figures which I am giving for one-half and three-quarters load of a much smaller power plant.

"I wish to emphasize the importance of what I believe to be the future of the question of power generation on a large scale, *i. e.*, the future of the gas engine, especially in this country. Although within the past two years great progress has been made in the use of gas engines, they have not found as ardent admirers in the United States as they have in Europe. Just within the last few months a remarkable interest in the question of large blast furnace engines is shown by the numerous inquiries which are being received by the various manufacturers building gas engines in this country. I feel satisfied that in the near future large gas engines will be found in the United States just as frequently as in Europe now. The iron masters in this country will have a vital interest in this question and they will have to consider the installation of gas engines very seriously, because the use of gas engines means the reduction of manufacturing cost of pig iron and steel."

The Philadelphia Foundrymen's Association.

The one hundred and fifty-fifth regular meeting of the Philadelphia Foundrymen's Association was held at the Manufacturers' Club in that city Wednesday evening, March 7. Dr. Elmer E. Brown occupied the chair in the absence of President Devlin. The attendance was the largest in many months.

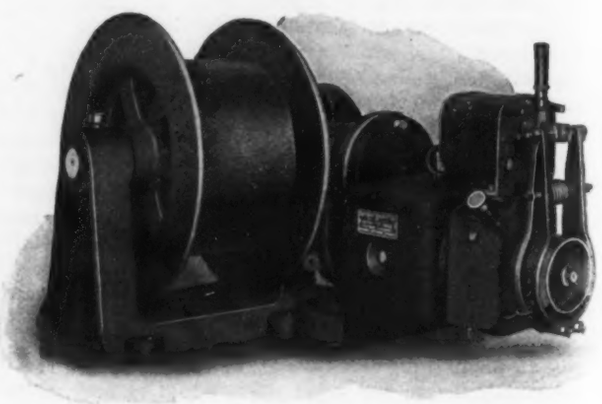
After the transaction of routine business a communication from the Pittsburgh Foundrymen's Association was read extending an invitation to a banquet to be given April 2 to the Philadelphia and New England foundrymen's associations at Pittsburgh. The invitation was accepted and a committee composed of Dr. E. E. Brown, W. O. Steele, H. L. Haldeman, George C. Davis, Thomas Devlin, F. Krug and Howard Evans was appointed to make necessary arrangements regarding the trip.

There was considerable discussion regarding the probability of a coal strike, particularly along the line of the policy of stocking raw materials. H. L. Haldeman, George C. Davis, Howard Evans, Dr. E. E. Brown and others entered the discussion, and while it was impossible to bring out any definite information it was the general opinion that it would not be unwise to cover business already in hand. Pig iron producers, it was said, differ materially in their views as to the probable outcome of the strike question, some preparing for it while others were not taking a very serious view of the matter. That all opinions were mere guesses at the time was generally admitted.

The paper before the association at this meeting was on the subject "Thermit Heating and Welding Compound," by E. Stütz, vice-president of the Goldschmidt Thermit Company, New York. Mr. Stütz presented no formal paper, his address being along the lines of a description of a large number of lantern slides. Many interesting views of repair work done by the thermit process were shown, covering railroad, steamship, electric railway, engine and general castings, and the various methods used in the repair work in each case. The adaptability of thermit in the foundry was shown whereby the heat generated by the reaction of the oxides of iron and aluminum which form the compound, and which is estimated at 5400 degrees F., may be used in a ladle of either steel or iron which had become too "dull" for the work in hand to bring the metal back to a proper fluid condition for pouring. The discussion which followed brought out many details regarding the applications and uses of the compound, many of which have been described in previous articles in *The Iron Age*. Mr. Stütz was given a unanimous vote of thanks for his interesting address.

A New Sprague Winding Drum Hoist.

One of the most recent of the several types of electric winding drum hoists built by the Sprague Electric Company, New York, is illustrated herewith. It is of a size and weight that is easily portable from place to place on a movable platform, truck or car, but when in use it must be securely fastened to a foundation. The hoists are capable of many applications; on boom derricks they may be used for raising both the load and the boom, or as whip hoists they may be used to raise loads rapidly through a hatchway or in the open on docks, on board ships or in buildings. Being entirely inclosed and dust and moisture proof, they require no protection from the weather when used out of doors. The controller, shown on the motor in the engraving, may if preferred be



A New Electric Winding Drum Hoist Made by the Sprague Electric Company, New York.

located in any other position, regardless of the situation of the hoist, thus affording convenience in operation. Standard winding drum hoists are rated for single rope, with maximum pulling capacities of ½, 1½ and 2½ tons. By multiplying the number of ropes correspondingly increased loads may be handled at reduced speeds.

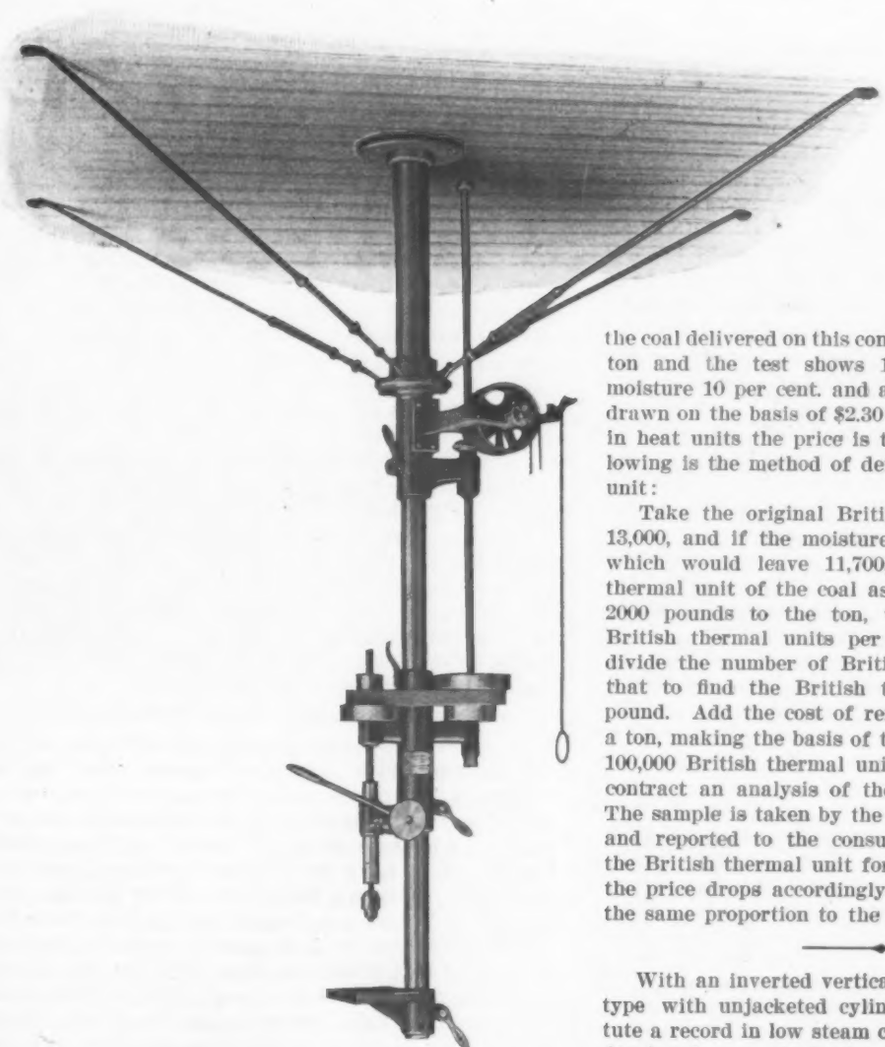
The Gayley Dry Air Blast Process.—A typographical error was made in table 3, page 874, in last week's issue. Following January, under 1905, in the column headed "Moisture in Dry Blast, Grains," the figures 1.76 as printed should have been 0.76.

The West Pittsburgh Realty Company, Bailey-Farrell Building, Pittsburgh, is sending out a folder setting forth the advantages of West Pittsburgh as a manufacturing site. This town is located on the main line of the Pittsburgh & Lake Erie Railroad, 47 miles from Pittsburgh, a short distance from New Castle, Pa. Already located at West Pittsburgh are the plants of the Garland Nut & Rivet Company, manufacturing bolts, nuts, rivets and chain; the Safety-Armorite Conduit Company, making enameled and electro galvanized pipe, used for conduit purposes; the Kinnear Pressed Radiator Company, maker of pressed steel radiators for heating purposes, and the Pittsburgh Fire Proofing Company, making artificial stone. There is also located at West Pittsburgh a silk mill operated by Woodhouse, Bopp & Co. It is understood that negotiations to locate are pending with several other manufacturing concerns at West Pittsburgh.

The Birch Suspension Speed Drill.

An innovation in a sensitive speed drill, for the use of architectural iron and sheet metal workers, machine shops and manufacturers in general, has been devised by Birch & Birch, Crawfordsville, Ind. An unusual range of work is claimed for it, inasmuch as the machine is suspended from the ceiling and is adjustable to the hight of the work and will drill to the center of any diameter by removing the lower tubular column and table. The usefulness of such an equipment for drilling holes in large tanks, pipes, sheets or anything of a bulky nature is readily apparent.

The spindle head is securely fastened to one end of a tubular steel column which is adjustable to any hight and is securely clamped in the top stationary sleeve of the driving pulley bracket. The lower column is clamped in the same manner in the lower end of the sleeve of the spindle head and can be removed at will. The table is clamped on the lower column and is adjustable vertically and to any horizontal angle. All clamping screws are provided with handles, eliminating the need of wrenches. The drill spindle has three speeds through cone pulleys and has a lever feed. The machines are adapted to any hight of ceiling by using longer or shorter connecting tubes from the top stationary driving pulley bracket to the ceiling flange.



A Suspension Speed Drill Made by Birch & Birch, Crawfordsville, Ind.

The standard equipment is intended for suspending from the ceiling 12 feet high. With the lower column removed the greatest hight from the floor to the bottom of the spindle is 6 feet 2 inches and the least hight 3 feet 2 inches. The traverse of the spindle is 4 inches. The hole in the spindle is adapted to take a No. 1 Morse taper shank or as required. The spindle is ¾-inch in diameter and the steel columns 2¼ inches. The driving pulley runs at about 200 revolutions per minute. With the lower column and table attached the distance from the drill to the column is 3 inches. The distance from the spindle to the table in its lowest position is 13 inches. The table surface is 5¾ x 8 inches. The machines can be furnished when desired with counter weights to counterbalance the weight of the head and column and all of the parts are interchangeable.

Buying Fuel on Analysis.

An unusual form of fuel contract was described at the Northwestern Electric Association's convention. It is the basis of power station fuel purchases by an electric lighting company and the city of Chicago is said to have let contracts for 200,000 tons in this way. After the coal is selected a chemical analysis is made and a contract is drawn in which it is stated that the coal of the sample as delivered corresponds to certain chemical analysis, which is used for the purpose of identifying the coal delivered on this contract. If a coal costs $2.30 a ton and the test shows 13,000 British thermal units, moisture 10 per cent. and ash 8 per cent, the contract is drawn on the basis of $2.30 per ton, but if the coal varies in heat units the price is to vary accordingly. The following is the method of determining the British thermal unit:

Take the original British thermal unit of the coal, 13,000, and if the moisture is 10 per cent. deduct 1300, which would leave 11,700, or the commercial British thermal unit of the coal as delivered. Multiply that by 2000 pounds to the ton, which would give 23,400,000 British thermal units per ton. As the price is $2.30 divide the number of British thermal units per ton by that to find the British thermal unit for 1 cent per pound. Add the cost of removing the ashes at 50 cents a ton, making the basis of the contract in this case about 100,000 British thermal units for 1 cent. On a 5000-ton contract an analysis of the coal is made once a week. The sample is taken by the regular method and analyzed and reported to the consumer and the contractor. If the British thermal unit for 1 cent is lower than 100,000 the price drops accordingly, and the price always bears the same proportion to the original contract price.

With an inverted vertical compound engine of marine type with unjacketed cylinders what is said to constitute a record in low steam consumption per unit of power developed was attained in a Belfast weaving factory. Each cylinder had four piston valves—one at each end for the admission of steam and one at each end for exhaust; the steam valves were opened by eccentrics and closed by springs through a Dobson trip gear, the cut off on high pressure being controlled by a governor and on low pressure by hand. The exhaust valves were operated by eccentrics. Cylinders measured 21 and 36 inches in diameter with 36-inch stroke. Steam was superheated 200 to 250 degrees F. in an independently fired Schmidt superheater and the minimum consumption per indicated horse-power per hour was 8.585 pounds, at 145 horse-power. Vacuum was about 27 inches. Five other runs at various loads from 258 to 481 horse-power gave consumptions ranging up to 9.267 pounds per unit. It was strange that the greatest economy should have been obtained at the lightest load and, as it chanced, the lowest superheat.

Patriarche & Bell, 215 Pearl street, New York, are making a specialty of the usual sizes of spring steel in rounds, squares and flats for railroad and mechanical shops, of which they carry a large stock.

A British Engineer on American Rolling Mills.

A recent issue of the *Journal* of the West of Scotland Iron and Steel Institute reports an address delivered before that organization by P. N. Cunningham, under the title "Some Notes on a Visit to Iron and Steel Works in the United States and Canada." The address was illustrated with lantern slides and contained many interesting observations on the operation of plants with which steel works engineers on this side are generally familiar. What is said of plate mills visited in the United States will bear reprinting, in view of the opinion expressed by Mr. Cunningham that the plate mills in Scotland do better work than those he visited in this country. In describing a three-high plate mill in the United States, the location of which is not specified, he said:

American Plate Mill Practice.

The rolls are 153 inches long and are capable of rolling a plate 12 feet 6 inches wide. This mill was rolling from the ingot to the finished plate. The whole design and arrangement are of the most massive and complete pattern. The mill tables are raised and lowered by hydraulic power, and the ingot is manipulated by levers worked by men. The guards on the mill—both on the top and bottom rolls—are the most efficient I have seen. They were a perfect mechanical fit and brought the plates evenly out without a hitch while the mill was running at a speed of from about 50 to 60 revolutions. A unique apparatus is attached to this mill—at least one I had never seen or heard of before. It is in the form of a knife or shear blade, fitted into the housings, and with a keen face beveled away, like a keen cutting shear blade, and projecting forward beyond the inside of the body of the housing. This is to shear or to rip off any portion of the plate that was tending to run to the housing, or neck of roll; and I had evidence that it had been at work, as cuttings or curlings were lying underneath the side of housing. The plate, after leaving the rolls, is run onto roller gear, placed at the end of the table, and is carried forward and passed through a 7-roller straightening machine. Leaving the straightening machine, it is carried on roller gear along a shed of about 300 to 350 feet long. On reaching the end it is stopped and is immediately over a set of levers. These levers can turn the plate right over onto another set of rollers alongside. They are operated by oscillating hydraulic cylinders. If the plate is not to be turned upside down the procedure is as follows: In the levers is a series of rollers (geared from a central shaft) which can be driven in either direction. The operating cylinders raise the levers slightly and the rollers engaging with the plate move it transversely across to the other set of roller gear, which slowly brings back the plate toward the mill. At the mill end a duplicate set of levers is placed and the same operation gone through, and the plate is again moved along the roller gear toward the shears. By the time the plate has reached the shears it has traveled almost 1000 feet longitudinally and about 50 feet transversely, all by mechanical means, without the attention of any one but the boy at the levers. It is then passed into shears and cut.

The outlay in the case of this mill must have been large, compared with the output. I think the large plate mills in our own district decidedly do equal and even better work than any I saw on the other side, and the quality and finish of plates made in our district are certainly superior.

For plates not under ¼ inch or 5-16 inch and up to 48 inches wide a three-high universal mill is preferable to a reversing mill and would do this class of work with economy and give larger outputs, but the rolling margin allowed in this country could not be obtained. Plates 60 inches wide by 5-32 inch and 40 to 50 feet long are rolled in this district and are rolled to a 2½ per cent. margin.

Continuity of Work.

A prominent feature of American practice is the great importance attached to continuous working. The principle laid down and which is always kept in view is that the rolling shall be continuous and there shall not be any delay between the pieces. Each set of rolls in a train shall be kept fully employed and the maximum number of blooms or slabs shall be at all times passing through the mill, so that the whole plant is running at the most economical point and doing the maximum amount of work. Great attention is paid to the guides and to the guards. They are machine fitted, close and tight, are readily adjusted and after once adjusting will run the whole day without attention and this at the full speed and capacity of mill.

The roll necks and wobblers are large in proportion to the diameter of rolls and the work done. The necks of rolls run from 74 per cent. to 78 per cent. of the diameter of roll, and the diameter of wobbler is from 68 per cent. to 72 per cent. of the diameter of the roll. This, you will see, not only enables the roll to bear the strain of the material passing through, but also to take the torsional strain of driving the sets of rolls immediately following when each set of rolls is doing the full work. Very little clearance is allowed in the gearing and coupling boxes and spindles, so that all the time the driving parts are against the driving face to prevent back lash.

It is common knowledge to all in the West of Scotland that in the early days of plate rolling the engines, housing rolls, furnace and shears were all that was considered necessary to equip a mill. To-day I venture to say that modern appliances or accessories are inseparably connected and are as necessary as are the heating appliances and a modern steam engine. This applies to all mills—whether plate or structural. It is in this direction that we must look closely to see that all our methods and improvements are in the direction of continuity of work and that at no stage of the operation we allow the product to cease its onward course toward the complete and finished article.

While I think our mills for the production of large sections and our large plate mills are capable of turning out better finished work in regard to surface, we have room for improvement in the transportation, handling and assembling of the product, both before and after rolling. These considerably increase our costs, as compared with the American practice. Greater attention must be paid to have the operations in the works continuous at all stages, so that there may be no delays or time when the plant is not producing to its full capacity.

What Great Britain Might Pattern After.

To one who has seen the different appliances at work the question which occurs is, To what extent can such appliances be utilized here, bearing in mind the altered conditions? A great many of the arrangements could be partially adopted, such as the special appliances for unloading ore, in the form of using special grab buckets of the Hulett or Brown type, with swiftly moving cranes capable of lifting, say, 10 tons per trip and of moving swiftly from one hatch to another and the more general use of hopper-bottomed cars—both for ore and coal; the more rapid movement of ingots from melting shop to one convenient point for stripping and thence charging into soaking furnace; transporting the slabs from slab shears to furnace; greater extent of floor room in our plate mills, with better cooling arrangements; better facilities for loading, with wide-span cantilever cranes for covering the loading bank.

For smaller mills, from 7 inches up to 12 inches, I think the Belgian system could be adopted and in this way meet the requirements which exist here where both iron and steel are rolled.

For rolling steel, where nothing but steel is used, I consider a continuous furnace with a continuous roughing set and a 10-inch guide mill and up would give the best results. The outlay should not be great, as an efficient and economical engine could drive the whole system much more economically than the engines we have running guide mills to-day. Since my visit to the States continuous furnaces are being erected to deal with both steel and iron. Should these furnaces be a success—and I have little doubt they will—the continuous roughing set will then lend itself more readily to the conditions that exist in our own immediate neighborhod, where both iron and steel are used. The rope drives I saw in the States are doing their work well.

Another View.

The president of the institute, A. Lamberton, who visited the United States at the time of the American meeting of the Iron and Steel Institute in 1904, commented as follows on Mr. Cunningham's address:

"The point of most interest in what has been said about rolling is that in regard to the comparison of our methods with those in the States and particularly in regard to thinner plates. In the States they enjoy a latitude as to thickness and when busy will not take orders unless they get a margin of 15 per cent—7½ per cent. each way. Such a condition of things, however, is impossible here. We rolled thin plates to within 2½ per cent. Comparing their work with ours, they certainly can produce an enormous output of plates of that description, but neither the margin of thickness nor the finish of their plates is at all comparable with what we do here. In the States they can far outstrip us in the output of billets and rods. They have an enormous demand for square billets, and the mills that Mr. Cunningham has described were built for the purpose of turning out these billets in the greatest possible quantity and with the least possible labor, and in this they succeed admirably, but if any enterprising firm on this side were to put down a mill of that kind they would find it difficult to keep it going. Mr. Cunningham has put the question whether we could adopt in this country all of the improvements and developments which he described as existing on the other side. If we had a demand anything like that of the Americans I have not the slightest hesitation in believing that we could meet the case. We have done so, so far as the demand called for, and if the demand were to increase we would be there also." The speaker said that the impression left in his mind after three visits to the United States was that British manufacturers would never be so seriously threatened by America as they were likely to be by Germany. A visit to Germany and some parts of Belgium showed machinery, processes and outputs that more than favorably compared with anything he had seen in the States, and when it is considered that, along with that they are favorably situated in regard to the cost of labor, he thought there was some cause for uneasiness.

The Continuous Furnace and Continuous Rolling.

In concluding the discussion Mr. Cunningham referred to one point that perhaps he had not made sufficiently clear, and that was in connection with the continuous furnace and guide mill rolling. His impression was that the coming practice would be to have a continuous roughing set, feeding two guide mills. The continuous furnace was coming to the front, and with it it would be possible to deal with both iron and steel in the same furnace, with a roughing set placed in front preparing the billets and delivering them to each of two guide mills. The continuous roughing set, he thought, would be a 2-stand roughing mill that would prepare two billets—a different class of billet for each mill, or perhaps the same class—but in any case he thought that a continuous roughing set was quite capable of rolling down twice the quantity of work that a guide mill could do. He had seen an ordinary guide mill running in the States, to which had been added a continuous roughing set—an ordinary guide mill, not so good as some of the older mills in the West of Scotland—and it had improved the output 80 per cent. and reduced the number of men 30 per cent., so that he thought there was some encouragement to adopt some of the American methods. As he had already said, he did not think it would be wise for any iron or steel manufacturer in Great Britain to adopt American ideas in their entirety, because the conditions were entirely different from what they were in America, but there were a great many things in that country that if applied in Great Britain with judicious care might prove good investments.

A Paris letter to the London *Times' Engineering Supplement* notes a general improvement in the engineering trade in France for several months, everything tending to indicate that this improvement will be maintained for some time. The motor car trade and builders of rolling stock for railroads appear to be the most favored and the work in hand in both these branches all over the country is very great. Nearly all branches of engineering are enjoying a revival of trade, the want of which has been felt for a long time.

Pacific Coast Business Prospects.

SAN FRANCISCO, CAL., March 3, 1906.—During February there was a sufficiency of rainfall to meet the wants of farmers, orchardists and miners. The former had enough to keep the growing crops in good condition and the temperature was sufficiently high to promote the growth of vegetables and cereals and leave the fruit trees in good condition. There is enough water for the mines to be worked for the present, with a sufficient amount stored up to last for months. Fruit crops promise a large yield, while the expectation is that we will have 35,000 cars of citrus fruits to ship to the East.

The spring trade in California is not what it is in other States and not what it used to be here. The fall is now the great season of trade, as when the crops come in the farmers on the coast have completed their labors and have money to spend. Spring, however, gives indications of what the year is to be and is the time to lay in supplies of agricultural implements. The import trade in this line has been shorn greatly of its importance during the past ten years or so, as local manufacture for the most part has taken its place. Stockton is the great center of the manufacturing business at present, while Benicia and San Leandro are also important seats of the industry. The sale of plows, cultivators, harrows and other goods suited to the present or planting season, which is not over yet, may be considered to have been good.

There has always been a moderate demand for implements for export and considerable sales have been made for Australia, Mexico and other Pacific Coast countries. While this refers particularly to California, it is true also to a greater extent of Oregon and Washington, where the Eastern manufacturer has a better show and ships more goods than he does to California; but the California gang plow has made its way to all parts of the coast, and not only that, but during the past few months a number of consignments have been made even to Spain, where the gang plow has in a small way revolutionized the methods of agriculture.

The outlook is for a fair salmon pack along the coast this year, though not such a large one as in 1905. The yield of fruit will be large and an increased amount will be canned for Eastern and English markets. All this will call for large supplies of tin plate, the stocks of which, owing to the salmon packing of 1905, are in light supply.

Imports by rail have been large for the season, especially in the line of hardware, pipe and merchantable iron and steel. Large supplies of steel rails will be needed on this side of the Rocky Mountains for the Western Pacific and also for the extensions, improvements and additions to their lines by the Southern Pacific and the Santa Fé. There are also many short roads that will be put through during the year, including the bridging of a 100-mile gap between the terminus of the Eureka & Eel River Railroad at Pepperwood on the Eel River and Sherwood on the California Northwestern. J. O. L.

Sixteen Blowing Engines for the Carnegie Steel Company.—The 16 long cross head vertical blowing engines recently ordered from the Allis-Chalmers Company, Milwaukee, by the Carnegie Steel Company, Pittsburgh, will be installed at the Edgar Thomson and Isabella furnace plants located at Braddock and Sharpsburg, Pa., respectively. Seven pairs will replace old engines at the Edgar Thomson Works and one pair will go to the Isabella furnaces. Eight of the engines will have steam cylinders 44 inches in diameter by 60-inch stroke and air cylinders 84 x 60 inches, and eight will be equipped with steam cylinders 84 x 60 inches and air cylinders 84 x 60 inches.

Favorable Action on Free Alcohol Measure.

WASHINGTON, D. C., March 13, 1906.—Notable progress in the campaign in Congress to secure the enactment of a law granting free methylated alcohol for industrial purposes has been made during the past week. The Ways and Means Committee, after hearings occupying six days, has appointed a sub-committee to confer with the Commissioner of Internal Revenue and draft a substitute for the half score of bills now pending in the House. The vote in the committee on the resolution to have an official measure drafted was unanimous and foreshadows an early report on a comprehensive and carefully guarded bill.

The object of the sub-committee will be to provide a simple measure conferring upon the Secretary of the Treasury full authority to regulate the use of alcohol, and care will be taken not to embarrass the authorities by enacting provisions in the nature of regulations. It is understood that the substances to be used for the purpose of denaturing grain alcohol, as well as the proportions thereof, will be left to the Treasury Department, although it is possible that the use of wood alcohol as a methylating agent may be specified with a view to supplying an outlet for that product, the use of which for many purposes will be supplanted by denatured grain alcohol.

Cost of Alcohol for Fuel.

The decision of the Ways and Means Committee to prepare a bill, though based to some extent upon the testimony adduced during the recent hearings, was finally reached as the result of a special investigation undertaken by the Philadelphia Trades League to determine the cost of grain alcohol when produced in large quantities for fuel, light and power. The members of the committee became convinced during the recent hearings that the great field for the use of denatured grain spirits in the United States is as fuel for internal combustion engines.

In meeting the arguments of the advocates of this legislation the representatives of the wood alcohol industry presented figures designed to demonstrate that methylated spirits could not be sold in the United States for less than 35 to 40 cents per gallon, a price which, it was asserted, would be absolutely prohibitory, even if the cost of gasoline should increase materially above the present high price, due to the fact that the petroleum now being produced in the largest fields contains a relatively small proportion of the lighter distillates.

Results of Investigation.

Realizing the importance of determining the maximum limit of cost of industrial alcohol the Philadelphia Trades League, which was represented at the hearings by M. N. Kline, a well-known chemist and manufacturer, took the matter up in detail with a view to securing specific information on this point, and recently submitted to the committee an interesting and important statement showing the cost of grain alcohol produced in well equipped distilleries to be only a fraction of that stated by the wood alcohol people. Mr. Kline said in part:

The records of a distillery located in Peoria, Ill., operated almost continuously from January, 1896, to December, 1905, a period of ten years, have been furnished me by the owners. These records show that:

(a) The cost of production has fallen as low as 5.20 cents per proof gallon, equal to 9.77 cents per wine gallon testing 94 per cent., or 9.36 cents per wine gallon testing 90 per cent.

(b) The average cost per proof gallon during the entire period of ten years was 10.78 cents, equal to 20.26 cents per wine gallon, 94 per cent., or 19.40 cents per wine gallon testing 90 per cent.

(c) The average cost of corn during the entire period of ten years covered by these records was 42.36 cents per bushel, and the average yield from each bushel was 4.76 proof gallons.

In addition to the foregoing I am informed on reliable authority that:

1. No well equipped distillery operated in the United States at the present time produces on the average less than 4.96 proof gallons per bushel of corn and that quantity is frequently exceeded.

2. All the alcohol produced at the present time in the United States for beverage purposes or for use in manufacturing perfumery, flavoring extracts, &c., must be distilled from merchantable grain, no matter what the price of inferior material may be. In the production of denatured alcohol the inferior materials, equal in starch or sugar, would be used and the cost correspondingly lowered. It is not believed, however, that corn at reasonable prices for distilling purposes will be superseded by other staple farm products.

3. As denatured alcohol would be transported in metal packages or in tank cars, which would remain in use for an indefinite period, the cost for packages and cooperage under existing conditions would be reduced to a minimum figure.

4. As the price at which untaxed denatured alcohol would be sold for light, heat and power purposes will not be governed by the extent of the competition, or lack of competition, among distillers, but by the prices at which kerosene and gasoline may be obtained by the consumers, it necessarily follows that having in view the enormous markets which would be created by the proposed legislation the distillers could afford to furnish their produce at very small margin of profit.

Conclusions of the Committee.

Realizing that ethyl alcohol when produced from surplus crops, frosted corn, damaged fruit, etc., would be much less costly than when made from merchantable grain, the Ways and Means Committee reached the conclusion that the fuel problem, which is now becoming of vital importance in certain sections of the country, would be speedily solved by the proposed legislation. As to the cost of methylating, it is calculated that even a 10 per cent. addition of crude wood alcohol would not increase the price of the mixture more than 3 or 4 cents, an increase that would be offset to some extent by the reduction in proof of 10 to 15 per cent, which, according to Prof. Elihu Thomson, increases rather than decreases the efficiency of grain spirits as fuel for internal combustion engines.

The committee has also secured information of a series of photometric tests made with alcohol and kerosene which demonstrates beyond doubt the interesting fact that the efficiency of alcohol is 100 per cent. greater by volume than kerosene, so that methylated spirits at 30 cents per gallon would be as economical as kerosene at 15 cents, beside being much safer to handle and store, as well as cleaner and pleasanter to use.

The interest in this important question which has been aroused among farmers of the country has resulted in deluging members of the House with letters, petitions and memorials in favor of the proposed legislation, and it is believed that the bill to be reported by the Ways and Means Committee will pass the House by a practically unanimous vote. The real test will come in the Senate, where the wood alcohol people will make their hardest fight, but it must be said that indications now point to favorable action by the Senate with very little delay.

W. L. C.

The Railroad Building Campaign in Canada.

The activity in railroad building in the United States this year is accompanied by an unusual building movement in Canada. The *Railway Age* makes the following statement, which it says is not complete, but is sufficiently so to indicate that Canadian railroad builders have a busy period ahead:

The Grand Trunk Pacific has just awarded contracts for 457 miles of its main line, which, with the 275 miles from Portage la Prairie west and the Lake Superior branch, 210 miles long, previously awarded, make a total of 942 miles under contract to date. This carries the main line as far west as Edmonton, beyond which point it is understood no construction work will be undertaken this year. The Transcontinental Railway Commissioners are receiving bids for 395 miles of the line between Moncton and Winnipeg, which will be built by the Canadian Government, but which will be operated by the Grand Trunk Pacific when completed. The Canadian Northern, which completed its main line as far as Edmonton last December, is preparing to rush work from that point west to Port Simpson, on the Pacific Coast, and in addition is building branches aggregating several hundred miles, not including the James Bay Railway, 208 miles; the Halifax & Southwestern, 86 miles, nor the Great Northern of Canada, 110 miles, all under construction and all of which are controlled by Mackenzie & Mann, who are building the Canadian Northern. The Canadian Pacific has nearly 500 miles of branch lines projected or under construction, the most important of which is the Toronto-Sudbury line, 226 miles long.

Canada's Uses for Capital.

Must Go Abroad for It.

TORONTO, March 10, 1906.—A short time ago the Canadian General Electric Company disposed of 11,000 shares of its common stock to a financial house in London, England, getting for it $120 a share, whereas the price on the Toronto Stock Exchange at the time was in the neighborhood of $150 a share. The $1,320,000 thus raised was required to put the company in position to handle its increasing business. In the circular explaining the transaction to the shareholders the directors make this statement:

> Since our last annual meeting a considerable amount of new business has been offered to the company, and continuously fresh orders and contracts have been coming in, of such a nature that the management deemed it important to accept the same, not merely on account of the advantages to be derived from doing the business, but because the refusal to accept it would have tended to divert business to the United States which should be done in Canada. During the year this business has developed and increased to such an important extent that it became advisable to introduce additional capital into the company, and the opportunity was afforded the directors of securing this from British capitalists, who offered to take all the capital stock of the company remaining unissued, on terms which the directors considered it advisable, in the best interests of the company, to accept.

The truth is that the demand for electrical equipment of all kinds has been going forward in this country of great water-powers and new development by leaps and bounds. This is the second issue of common stock the company has felt obliged to make within the last twelvemonth, in order to bring its operations into pace with the demand. The trade in electrical plant and equipment has still not been overtaken. Of course, the large home demand that American manufacturers have to attend to is favorable to the prosperity of works in Canada engaged in the production of electrical machinery and apparatus. This company has now $5,000,000 paid-up capital, of which all but $300,000 is in common stock.

The noteworthy point about this increase in capital is that it was found necessary to go out of the country for it. For previous issues the company found a sufficient demand from domestic investors. But for this one, though the business was never so flourishing before, and the return in earnings was never greater, there was evidently a disinclination on the part of the Canadian public to take any more stock. This is the one fetter upon industrial progress in Canada, the difficulty of getting adequate capital at home. For one concern of the high security of the Canadian General Electric Company there are ten of lesser strength, though of good promise, also in need of capital to enable them to cope with a growing demand.

Looking Abroad.

For capital as well as for population the country has to look abroad. To raise money for the construction of the Western Division of the National Transcontinental Railway the Grand Trunk Pacific Company had to go to the United Kingdom, as had the Canadian Northern Railway Company. Both sold their bonds in the British market. The Canadian Pacific Railway Company will find the majority of the buyers of its new issue of common stock on the other side of the Atlantic and in the United States. To pay for its Temiskaming line the Ontario Government had to sell treasury bills for $6,000,000 in London, which treasury bills it will shortly retire with the proceeds of an issue of inscribed stock.

Observers who note analogies between this country's development and that of the United States in an earlier period of the latter's history are inclined to think that British investors are more grudging of their money to Canadians than they were to Americans.

Government Assistance.

British investors appear still to want the public credit in some way pledged before they will venture in freely. In the case of the Eastern Division of the National Transcontinental Railway the sole security is that of the Dominion Government. In the case of the Western Division the Dominion Government is again committed, as it guarantees the bonds of the Grand Trunk Pacific. In the case of the Canadian Northern there are land subsidies and cash subsidies by the Dominion Government and Provincial governments, or there are bond guarantees by either of these public authorities. The Canadian Pacific Railroad is in a position to command capital upon the security of its own resources, but it must be remembered that one of the most valuable assets of this company is its great land area, which it acquired as a subsidy from the Dominion Government. In the case of the Temiskaming & Northern Ontario Railway the public credit is again involved, the Ontario Govenrment being the builder of the road itself. British investors will buy such securities, or they will buy the issues of good municipalities, but they are not free purchasers of industrial stocks.

American Enterprise.

American enterprise is doing something to fill the gap. American contractors have secured two stretches of the Grand Trunk Pacific line. American money has been put into the business of manufacturing rolling stock and locomotives, and it is said other Americans are contemplating the building of railroad equipment works at Windsor, Ontario. There is a feeling that if the steel industry of this country is to expand as rapidly as present conditions seem to require it will have to attract American steel manufacturers into the field. New capital to provide for enlarged operations in existing works will not be easily obtainable, for the returns on capital already invested here have been disappointing. The thousands of miles of railroad line to be built in this country in the next few years will call for a very large expenditure, but the development which will follow this construction will call for far more. These new railroads are unlocking tremendous resources of fertile line, of forest wealth, of mineral deposits and of water-powers, for whose utilization immense amounts of capital will be necessary. These developments are being to some extent anticipated by speculators, of whom Americans are the most alert. American syndicates have secured possession of extensive tracts along the routes of projected railroad lines in Saskatchewan and Alberta, and many of the claims staked out in the rich Temiskaming district of Ontario belong to adventurers from the United States. At the timber sales of the Ontario and Quebec governments there is always a good attendance of American buyers, and to them usually falls a large proportion of the limits sold. The two companies that are now producing power on a large scale on the Canadian side of Niagara Falls are made up chiefly of American capitalists. At another great border power center, namely Sault Ste. Marie, American enterprise led the way. And it is American enterprise that is building the works at that other border power point, Fort Frances, on the Rainy River.

Charges Lack of Confidence.

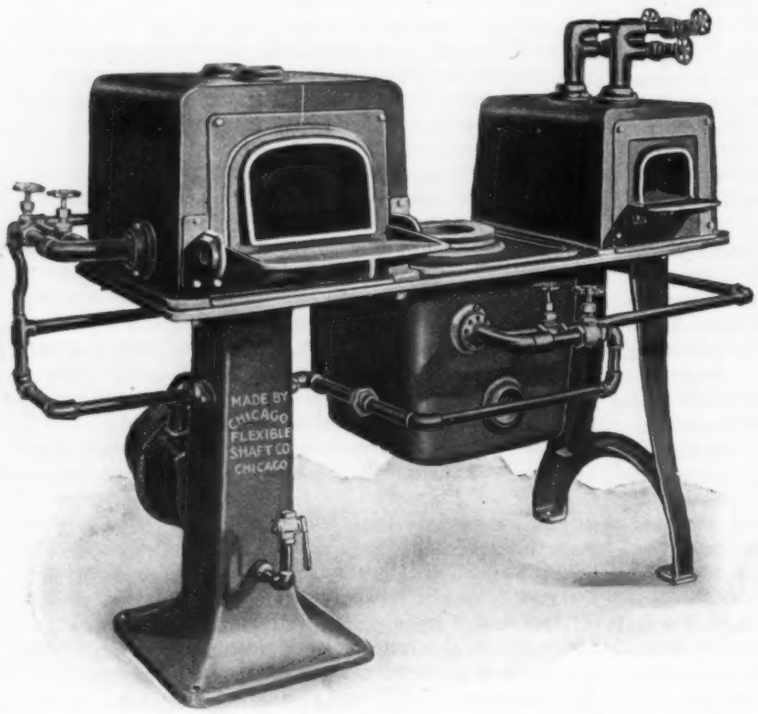
At a banquet in his honor in the Lafontaine Club, Rodolphe Forget, M. P., who may be regarded as the leader on the Montreal Stock Exchange and who is connected with many large undertakings, made an address in which he insisted that Canada's great need is confidence. He pointed out that millions and millions of dollars will be needed to carry on the development of the country's resources in the next few years, and he appealed to Canadian capitalists to apply their money to the work. It is a fact that Canadian capital is largely in the hands of conservative men, who do not readily yield to the new spirit that is abroad in the country. But even if there were the utmost readiness to fling Canadian capital into new ventures in the country, the whole of it would not suffice. It is further to be said that much of what is condemned by Mr. Forget as lack of faith in the country is nothing more than absence of recklessness. The company laws will have to be amended very radically before the interests of investors are safeguarded against the unscrupulous promoter as they ought to be. It is worthy of note that steps are being taken to set Ontario's corporation law in order. In the present

session of the Legislature a bill has been introduced which is in substance the corporation law of Great Britin of 1900. The measure is sure to pass. It will put an end to much of the corporation mongering that has been going on. C. A. C. J.

The Stewart Combination Gas Furnace.

The gas furnace illustrated may reasonably be considered a valuable part in the equipment of a modern machine shop, combining as it does a muffle, forge and crucible furnace, all on one base and conveniently arranged. It is known as the Stewart special combination gas furnace and is made by the Chicago Flexible Shaft Company, Chicago, Ill.

In the muffle section, shown at the left, the flame is projected from the double burners into the chamber encircling the muffle. The lining is so constructed that a



The Stewart Special Combination Gas Furnace, Built by the Chicago Flexible Shaft Company.

rotary motion is imparted to the flames, causing them to be evenly distributed over the inclosed space, heating the muffle rapidly and uniformly. Through the two small openings at the top of the chamber the products of combustion are drawn off. The work is absolutely secluded from the products of combustion, which is very desirable in heating dies, milling cutters and other expensive tools. It is claimed that the most difficult piece can be hardened perfectly without danger of cracking, because of the even temperature maintained throughout, and any chance overheating is eliminated.

The heat for the forge section, shown at the right, is also under excellent control. The two burners project the flame into the combustion chamber, which is circular in form and has a lining so shaped as to give a rotary motion to the flame, distributing it evenly all over the chamber. For dressing and hardening small forgings and tools this forge is described as very convenient and capable of a high quality of work.

The combustion chamber of the crucible section is circular in form and the burners are directed so that the flames do not impinge directly on the crucible, but are given a whirring motion, as in the forge and muffle, and, as a consequence, a uniform distribution of heat is effected. A vent in the rear allows the products of combustion to pass off readily. This furnace is especially adapted for lead hardening. The lead bath may be kept at a constant temperature for an indefinite period and it is claimed with a minimum consumption of gas.

The lead bath is considered to have many decided advantages over other methods for heating a great variety of small pieces. They can be heated very quickly, and by keeping the temperature of the lead at the right point overheating is avoided and uniformity is secured. For tempering, a crucible similar to that for the lead bath may be filled with tempering oil, and a thermometer suspended in the bath enables the exact heat to be maintained for tempering and drawing the work properly.

Large Gifts to Institute Building Fund.

The chairman of the Land and Building Fund of the American Institute of Electrical Engineers announces this week some very large and important contributions to this fund, the object of which is to raise $200,000 for the land in New York City on which the United Engineering Building, given by Andrew Carnegie, is now being erected. The total cost of the land is $540,000 and the obligation is diveded between the electrical, mechanical and mining engineers. Clarence H. Mackay, president of the Postal Telegraph-Cable Company, has given $5000 to the fund, accompanied by the expression of his interest in the building as a center whose facilities will be available to the various bodies of telegraphers. U. N. Bethell and J. J. Carty, members of the committee, have advised it on behalf of the American Telephone & Telegraph Company, the Western Electric Company, the New York & New Jersey Telephone Company and the New York Telephone Company that these corporations have jointly contributed $25,000 to the fund in view of the great benefits that the existence of this new engineering center will confer upon the electrical arts and upon their employees in the widening field of telephone engineering. Other notable gifts to the fund are $1200 from E. W. Rice, Jr., and $500 from T. D. Lockwood. A number of subscriptions of less amounts have been received from the institute membership at large, and in this manner the fund has now reached the total of over $130,000, or two-thirds of the required amount. With the campaign it has already inaugurated and the plans now maturing the committee is hopeful of having the entire sum pledged before the institute moves into its new home.

In a 24 horse-power automobile, weighing 3.7 tons, including the eight men and full salvage equipment, the Paris Fire Department has a car which can travel at the rate of 22 miles per hour and can climb the steepest grades to be negotiated, being far ahead of similar cars drawn by horses. The four cylinder oil engine drives a generating dynamo instead of working directly on the axles. Current is inpressed upon a motor which drives the axles through differential and secondary gears, four different combinations offering the choice of a variety of speeds. This system conduces to much flexibility in operation, but has the grave disadvantage of very excessive weight for the power developed.

The United States Treasury ended the month of February with a surplus for the fiscal year, which began July 1. At the corresponding date last year the Treasury statement showed a deficit of $25,405,533. The surplus March 1 of this year was $1,102,002. The improved condition is due entirely to increased receipts from several sources, for the total disbursements have been larger than they were last year.

Handling Material on the Mesaba.

DULUTH, MINN., March 9, 1906.—There are this winter some interesting developments in the handling of earth on the Mesaba range, the culmination of experiments and study along the lines of more economical stripping. The use of electricity for operating shovels; the introduction of the permanent overhead clamshell device, operated by motors; the addition to shovels of their own light and other auxiliaries; the increasing number of private plants, operated by the mining companies themselves—all tend toward the further development of the stripping method and to ultimate greater economy.

The usual shovel, with its simple engine and its great waste of steam, is a most cumbersome device, measured from theoretical efficiency. But it has corresponding advantages, and it is quite doubtful if any substitute has yet been devised that can take its place.

An Overhead Machine for Stripping and Mining.

A very well-known firm of engineers is now erecting on the Mesaba range at a mine where there is considerable thickness of overburden, with a depth of 200 feet of ore, a permanent overhead machine for removing earth and for mining ore. It has been under construction for a year and will be ready to begin taking off the overburden in the spring. It is doubtful if much ore can be mined this season. Tracks with wide gauge have been laid on either side of the ore body to be stripped, and on these have been erected high traveling steel towers. The distance from one tower to the other across the proposed pit is, roughly speaking, 1100 feet. Cables have been stretched between, and these support a clamshell grab capable of lifting a very heavy load, sufficient to fill a car. The towers are movable from side to side of the ore body along their tracks, and the grab from end to end along its cables, the intention being to cover the ore deposit by the machine. Operations are electrical; the towers are shifted along the tracks by electricity and the grab is actuated in all its motions by the same force. It is expected that the force of the grab will pick up its load of overburden and later its load of ore and deposit it where desired along the line of cable. It is intended, of course, to break up the stripping and ore by powder, though it is supposed the grab is fully capable of doing its work without prior loosening of the material. It is said to be the intention of the designers first to excavate the ore to the bottom of the basin and then to deposit all waste material in the hole thus formed, but this is a scheme that will probably be impossible to execute. There are too many difficulties in the way and it means the loss of far too much ore to be permitted in actual practice. The material must be carried away, and for this railroad cars must be employed, as for the removal of ore.

It is easy to find objections to the economical operation of such a machine, but it will be well to forget them till the plan has been tried and the actual results are at hand. It is an innovation, and innovations are not always looked on with favor, but it is designed by a firm that has been very successful in the solution of difficult problems in the handling of material on a large scale and which has gone into this experiment with the utmost confidence. One thing may be said at this time—such a machine must make a very great saving, not in percentage of costs, but in actual cents per ton of material moved to bring it into general use; for the interest charge will be several times that of a steam shovel outfit sufficient to do the work.

Electrically Driven Shovels.

During the present year at least one style of electrically driven steam shovels will be tried on Mesaba range mines. The General Electric Company and the Bucyrus Company are erecting a machine at Milwaukee that will be ready for operation shortly. It is proposed that this shall be driven by a 25-cycle three-phase alternating current, which will be generated at Duluth and conveyed to the range overhead. Perhaps another type of electric shovel will be tested during the year. The electric shovel presents certain advantages over steam that are readily seen and it would seem that it should be available for many classes of work, especially on stock piles, &c., but there are some difficulties in the way of its adoption for open pit work in general.

Some engineers are now suggesting the adoption of a shovel driven by compressed air, piped to the machine from a central station on the side of a pit, or in other available location. The use of steam to compress air and of this air to make power for a movable machine working along the side of a large pit, liable to be shifted every few hours and fitted to an engine built for a pressure of from 120 to 125 pounds, would not at first blush seem either feasible or economical.

Steam shovels are now being equipped with auxiliary engines for lighting and handling certain parts electrically, making them more self contained and adding to their efficiency.

Size and Capacity of Steam Shovels.

The usual steam shovel employed on the Mesaba range is a machine of 65 to 75 tons, though some have been built weighing up to 105 tons. The smaller shovel is generally considered better for this class of work. The dipper is from 1¾ to 3 and 4 yards' capacity, and these machines will handle daily from the bed of ore to the car from 4000 to 7000 tons, these being high water records for ore loading. A yard of ore is about 2 tons, of overburden not far from 1. In stripping fair average work will be from 1500 to 2000 yards every 20 hours' continuous work, though for occasional spurts and by picked men vieing with each other far higher records have been made. These, however, do not represent anything aside from possibilities and are in no way valuable as averages. With a shovel in ordinary practice there will be about three attendant locomotives and trains of dump cars, especially if the waste dump is some distance from the mine. The shovel and its trains will require nearly 75 men on two shifts, the greater part during days, for there must be some in the shops and the lesser portion of this crew at nights when the shops are idle. There may be 45 men on day shift and 30 at night. In good work these numbers are somewhat reduced to, say, 70 men or even less.

A fair average for Mesaba range work will be 28 to 30 yards per day per man. Some cost sheets of Mesaba stripping run as low as 19 cents per yard, but these do not include depreciation, which is very high, and it is safe to say that average Mesaba stripping will cost from 25 to 28 cents a yard. It is probable that the costs of 1905 were greater than this, for the year was exceptionally unfavorable.

No up to date operator on the Mesaba range now uses narrow gauge equipment. The shovels and attendant locomotives and dump cars are all standard gauge. Costs are varied by the difficulty of getting material away from the machine. With an easy ascent to the dump and a short haul it is much less than with a steep grade or a long haul. Several operations on the range have a grade of 3 to 3½ per cent. to the dump, which runs the cost of locomotive operation to a high figure.

There will be in the neighborhood of 125 of these "steam Finlanders," as the miners call them, in constant use on the Mesaba range during 1906, stripping, mining and loading stock piles. They are not only valuable in the work they do, but are a constant object lesson to agitators, and have a very definite repressive influence on the fervor of the walking delegate. Were it not for the steam shovel in mining it would be an impossibility for the Lake Superior region to gather enough labor to get out in a season the enormous tonnage now taken from this district. The machine has become so much more effective than in earlier years, and the cost of mining underground has advanced so rapidly, while really skilled miners capable of efficient underground work have become so hard to secure that the proportion of stripping mines is growing very fast, and the limit of depth to which a mine can be stripped is far more than a few years ago. One foot of stripping to 2 feet of ore was an accepted theory a short time ago, but now these figures have been reversed, providing the ore is deep enough to make the outlay remunerative. More than 6,000,000 yards of dirt were moved off Mesaba mines in 1905 by six contracting firms and two mining companies.

D. E. W.

Shipping Bill Prospects.

WASHINGTON, D. C., March 12, 1906.—The House Committee on the Merchant Marine and Fisheries has decided to take up on Thursday of next week, March 22, the shipping bill recently passed by the Senate. It is expected that a few days will be devoted to hearings on the measure, after which it will be considered in executive session, and its friends are confident that a favorable report will be made before April 1.

Outlook in House.

The situation in the House with respect to this measure is somewhat peculiar and may result in certain amendments of special importance to shipbuilders who hope to profit by this legislation. It is the present understanding that the solid Democratic vote of the House will be cast against the measure and that a number of Republicans from the interior States, and especially from the Northwest, will also oppose the bill. The present Republican majority is 112, and it is therefore obvious that even if 50 Republicans should vote against the measure it could still be passed by a comfortable margin. The managers of the bill, however, are credited with the intention of bringing forward certain important amendments which will have the effect either of cutting down the aggregate of the mail subsidies to be paid or of forcing a large number of Southern Democrats to support the bill in order to prevent the proposed modifications.

With a view to removing all ground for the charge that the proposed law would be of much greater advantage to the North than to the South, the Senate incorporated in the measure a number of new mail routes starting from Southern ports, and these amendments undoubtedly strengthened the measure and possibly prevented a filibuster on the part of Southern Democrats. The managers of the bill in the House are now said to have decided that if the solid Democracy is arrayed against the measure the entire seven routes starting from Southern ports will be stricken from the bill. These proposed routes are as follows:

From a port on the Gulf of Mexico to Brazil on steamships of not less than 12 knots speed for a monthly service at a maximum compensation not exceeding $137,500 per annum, or for a fortnightly service at not exceeding $275,000 a year; from a port on the Atlantic Coast south of Cape Hatteras and from a port on the Gulf of Mexico to Cuba on steamships of not less than 14 knots speed for a weekly service at a compensation not exceeding $75,000 a year or for a semi-weekly service at not exceeding $125,000 a year; from each of two ports on the Gulf of Mexico and from New Orleans to Central America and to the port of Cristobal on the Isthmus of Panama on steamships of not less than 12 knots speed for a weekly service at not to exceed $75,000 a year; from a port on the Gulf of Mexico to Mexico on steamships of not less than 12 knots speed for a weekly service at not exceeding $50,000 a year, and from a port on the Pacific Coast to Mexico, Central America and Port La Boca on the Isthmus of Panama on steamships of not less than 12 knots speed for a fortnightly service at not exceeding $120,000 a year.

Routes May Be Eliminated.

Whether the threat of the managers of the bill is carried out or not, it is stated that at least three of these routes will be eliminated either in the House committee or on the floor. Three of them were added in the Senate at the earnest request of certain Southern Senators, none of whom afterward supported the bill. The most conservative members of the House without regard to politics believe that any attempt to draw sectional lines on the bill will be a serious blunder and may result in causing so large a number of Republicans to oppose the measure as to bring about its defeat. It is pointed out that the disbursements on account of the proposed law would be made from the Federal Treasury and would represent taxes levied on all the people without regard to benefits derived under the proposed legislation.

From the shipbuilders' standpoint these proposed new mail routes are of much importance. While it has been suggested that the vessels for the proposed service may be purchased in the coastwise trade, the managers of the bill are confident that this will be impracticable for two reasons — first, because the demand for coasting vessels is far greater than that for ships for the foreign trade, and second, because vessels that could be purchased would not be able to make and maintain the speeds required for the carrying of the mails. While the prescribed rates of speed are moderate, yet the bill is so framed that nominal compliance with its provisions in this regard will not be sufficient, but the vessels must actually make the speed under the terms of the following proviso to section 6:

Provided, That the requirements of this section as to the rates of speed shall be deemed to be complied with if said rates are developed during a trial of four hours' continuous steaming at sea in ordinary weather in water of sufficient depth to make the test a fair and just one, and if the vessels are maintained in a condition to develop such speed at any time while at sea in ordinary weather. This trial shall be made under the direction and supervision of a board of naval officers which the Secretary of the Navy shall appoint upon the application of the owner or owners of the vessel to be tested.

It is believed that all the material amendments to the shipping bill that will be made in the House will be formulated in committee and attached to the measure before it is reported. As now organized the committee is composed of 12 Republicans and six Democrats, the Republican majority being large enough to spare at least two votes to the minority without endangering any feature of the bill. The measure is so much more conservative than any proposition heretofore laid before the House Committee, however, that its advocates believe they will be able to secure for it the united support of the majority members of the committee.

W. L. C.

The Mechanical Stoker for Locomotives.

At the regular meeting of the Central Railway Club, held at the Hotel Iroquois, Buffalo, N. Y., March 9, John W. Cool, road foreman of engines on the Pennsylvania, read a paper on the mechanical stoker for locomotives, in which he expressed the opinion that the device has come to stay. He said:

"There is a great deal of benefit to be derived from its use. The fire is carried more uniformly all over the grate, better than can be maintained by hand firing; the contraction and expansion are less on the side sheets and flues, for the fire is bright all over the grate at all times, and there is no air going into the fire box through the door, which is a great benefit. Less cleaning is needed for a fire with a stoker than with hand firing. Engines have been run 900 miles without cleaning their fire, which could not have been done with hand firing."

Superintendents of motive power have sought to train their men to fire a little coal at a time and fire frequently to avoid black smoke. The stoker gives a response to this idea, as it delivers from a fifth to a tenth of a shovelful at a time, which does away with the clouds of black smoke emitted from the stack by hand firing. Flues and fire box will last longer with a stoker. Mr. Cool had seen a fire about 12 inches thick maintained for 140 miles with a stoker and burning bright all over the grate, which could not have been done by hand firing. An engine can also be fired with a lighter fire on the grate and make more steam with a stoker than by hand firing. That being the case, it would give a more uniform temperature in the fire box when the throttle is closed and easier to keep with a little use of the blower.

It was conceded in a long discussion that the mechanical stoker is a coming device now in its infancy, but that with mechanical men at work on it it is sure to be made successful, even though locomotive firemen do not take kindly to it. The following committee was appointed for further investigation and to report as to the benefits to be derived: John W. Cool, chairman; J. A. Talty, Lackawanna, and David Meadows, Michigan Central. It was agreed that the use of mechanical stokers should be encouraged.

Excellent results are claimed for a new steam turbine of Schultz pattern, recently tried in Germany. It was direct connected to a three-phase alternator giving 550 volts at 3000 revolutions. The turbine and dynamo form a compact set 16 feet long and 7 wide, the two wheels of the turbine being placed on either side of the generator and having a diameter of 5.6 feet. This gives a peripheral speed of 875 feet per second; the governor adjusts the speed within 5 per cent. from no load to full load suddenly applied, and to half this range for quarter load. On the tests the consumption of steam per kilowatt hour was found to be 22.2 pounds at full load, 23.1 pounds at three-quarter load, 248 pounds at half load.

The Empire Steel & Iron Company.

The annual meeting of the stockholders of the Empire Steel & Iron Company was held at Jersey City, February 28. The report of President Leonard Peckitt was, in part, as follows:

"The production of pig iron in 1905 was 172,763 tons, or an average of 14,397 tons monthly. The mines at Oxford and Mount Hope produced 93,568 tons of ore during the year.

"The policy of developing the New Jersey ore mines, which had been undertaken some months before, after careful diamond drill prospecting, was carried forward rapidly, and before the close of the year ore was being mined from the Elizabeth vein, which averages, by chemical analysis, 62 to 63.50 per cent. in metallic iron, about 0.450 in phosphorus and is entirely free from sulphur. The second shaft, started over a year ago on another part of the property, has reached a depth of 325 feet, and from the diamond drill cores we know that we are now within 100 feet of a large body of ore, from which we eventually expect to obtain an output of over 300 tons daily of ore which can be mined and delivered to the furnace at a figure below the average selling price of the different varieties of magnetite offered to the general trade. From additional prospecting tests we are led to believe that other large veins of ore exist in the Mount Hope property, and as time goes on these veins will be gradually opened up and made productive.

"The condition of the Washington mine at Oxford is highly gratifying, the production being over 300 tons of ore per day from the shaft sunk three years ago. This vein of ore is said to be larger than any other similar deposit in New Jersey, and on account of its extreme freedom from rock it needs very little preparation to enable us to guarantee fully 60 per cent. in metallic iron.

"In view of the increased scarcity of desirable ore in the East and the immense benefits that would necessarily accrue to the company after complete development of its mineral lands, the purpose of the management is to push the development work as fast as possible. All of the furnaces are now in blast, and the prospects for the present year are considered good."

The usual statement of earnings for the year and the balance sheet of the company as of December 31, 1905, are as follows:

STATEMENT OF PROFITS.

Net earnings from operations in 1905		$135,751.47
Deductions:		
Allowance for improvements and permanent repairs, included in costs	$32,753.06	
Depreciation mining properties	11,486.45	44,239.51
Net profit for year		$91,511.96
Dividends on preferred stock		75,000.00
Balance to profit and loss		$16,511.96
Balance profit and loss account January 1, 1905		$178,598.09
Added December 31, 1905		16,511.96
Balance carried forward January 1, 1906		$195,110.05

CONDENSED BALANCE SHEET, DECEMBER 31, 1905.

Assets.

Real estate, plants and machinery		$2,879,124.37
Stocks and bonds		2,010,002.00
Cash in bank	$88,443.00	
Accounts and bills receivable	184,394.92	
Inventories:		
Pig iron	62,210.30	
Raw material, supplies, &c.	277,487.73	612,535.95
Total		$5,501,662.32

Liabilities.

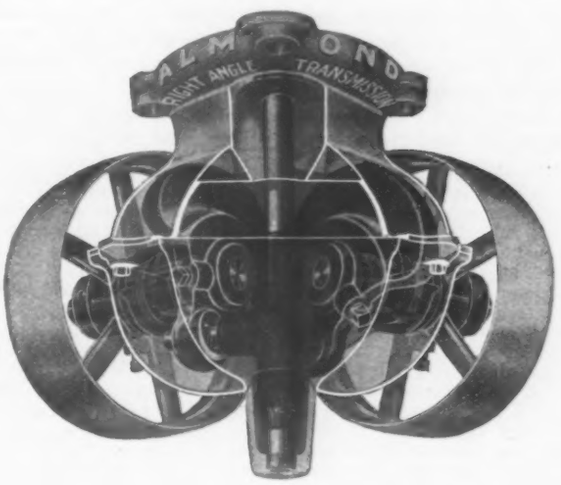
Preferred stock	$2,500,000.00	
Common stock	2,281,400.00	4,781,400.00
Bills and accounts payable	$432,569.75	
Pay rolls	19,611.91	
Dividend, payable January 1, 1906	37,500.00	489,681.66
Fund for depreciation and bad debts		35,470.61
Profit and loss		195,110.05
Total		$5,501,662.32

The Board of Directors was re-elected, with the exception of Archer H. Brown, who was elected to fill the vacancy caused by the death of Anderson Fowler.

A Large Almond Right Angle Drive.

For its size the right angle transmission illustrated is particularly interesting. It is a 40 horse-power coupling for transmitting motion at right angles and was recently built by the T. R. Almond Mfg. Company, Brooklyn, N. Y. The shaft diameter is 2 7-16 inches, maximum speed 225 revolutions per minute, size of pulleys 30 x 12 inches and weight 1500 pounds. Three smaller sizes of the same general construction have been on the market for several years, but to meet the demand for a coupling of greater horse-power capacity this larger size, with several improved features, was designed. It is claimed for this device that it can be used under all conditions of right angle transmission, that it transmits motion without variation in speed between the driving and driven shafts and that it is self-lubricating.

The principle of the mechanical movement is very unique. The device consists of two pulleys mounted on shafts at right angles, each having a crank arm connected to a common slide. The slide has two arms perpendicular to each other, the end of each of which is a stud sliding in a hole in a ball, which is free to move in a socket in the crank arm. The slide is fitted to a post upon which it is free to slide or rock. As the driving crank arm revolves it imparts a motion to the slide, which, at two instants in the revolution, is purely rotative at two points, half way between, is purely reciprocating, and at all other times is a combination of the two motions. The crank arms being duplicates, motion is communicated from one shaft to the other with an equal angular velocity at any part of the revolution. The entire mechanism is inclosed in a cast iron casing and runs in oil.



A 40 Horse-Power Right Angle Transmission Made by the T. R. Almond Mfg. Company, Brooklyn, N. Y.

A commendable feature of this coupling is the arrangement for lubricating. The lower half of the case serves as an oil reservoir, and, when running, the working parts dip into the oil and splash it to all parts of the interior, with the result that there is always a film of oil between the bearing surfaces. The upper part of the case is so constructed that light mineral oil does not cling to it and harden, but drops back to the bottom of the reservoir. The hub sleeves that hold the pulleys are provided with grooves both over and under the shafts to conduct oil over the length of the main bearings and back to the reservoir. Provision is made to prevent oil from exuding from the case and dropping to the floor. A glass oil gauge, not shown in the illustration, indicates the level of oil in the reservoir. It is claimed to be necessary to renew the oil only about once every two months.

The device permits economizing floor space and allows the most advantageous arrangement of machines, without the use of gears, mule pulley stands and like means of transmission.

The Manufacture and Characteristics of Wrought Iron.

The following discussion of the paper by James P. Roe, which was read at the Washington meeting of the American Institute of Mining Engineers, May, 1905, has been received by the secretary of the institute from Taylor Allderdice, Pittsburgh, Pa.:

In comparing the properties of wrought iron and steel Mr. Roe claims superior advantages for iron in respect to oxidation and welding qualities. Narrowing the subject to the manufacture of pipe, the long experience of the National Tube Company in the making and handling of both materials may be of interest.

Steel Pipe Shown to Be Perfectly Welded.

Modern Bessemer pipe steel approaches the nature of wrought iron closer than any other class of material. As now made it possesses advantages over iron in ductility, uniformity and welding qualities. The loss due to defective material in the pipe mills is about one-half on steel compared to what it is with wrought iron. The average butt weld with steel has been found to be stronger than the transverse strength of the iron unwelded. This, together with the superior strength and finish of steel, has greatly widened the field for tubular goods in recent years.

Manufacturers of bedsteads and electric conduits report that failures of steel pipe due to imperfect welding are quite insignificant. Since all the pipe is bent cold, this test is perhaps the best practical one of the weld. The following letters, representing records of about 90 per cent. of the pipe bent in the United States for electric conduits, bear out our general experience on the reliability of the welded seam in steel pipe:

We beg to acknowledge receipt of your inquiry regarding our experience in bending soft steel pipe, such as furnished by you to us for conduit purposes, and take pleasure in stating in reply that the pipe furnished bends perfectly. We have used this pipe for a number of years and are constantly making bends of all kinds on sizes from ½ to 3 inches. Thousands upon thousands of elbows are being made by us on our elbow machine at the factory every month, and the loss due to splitting of the seam is so infinitesimal that we abandoned a long time ago keeping any record of it. We run for a month at times without a single length opening at the seam. The radius to which this material is bent varies according to the size of the pipe, but the ½-inch pipe when made into elbows is bent to a radius of about 4 inches. In addition to this we have seen a great deal of this pipe bent cold on the job without any appearance of opening—bent into any shape and form by the workmen who install the pipe, and we can state positively that we have had no complaint for several years, at least, of any length of pipe opening at the seam under these conditions.

AMERICAN CIRCULAR LOOM COMPANY,
A. T. CLARK, Treasurer.

Answering your inquiry as to our experience in bending soft steel pipe, would say that we make at our factory anywhere from 15,000 to 20,000 bends per month, the sizes of pipe ranging from ½ inch to 3 inches inclusive. In the above quantity we rarely find as many as 25 bends that will open in the seam—in fact, there have been some months when we did not have over six. These bends are made cold, and are bent to as short a radius as 4¼ inches in the smaller sizes.

SAFETY-ARMORITE CONDUIT COMPANY,
ROBT. GARLAND, Treasurer.

As to Oxidation.

Mr. Roe has a preparatory word to say in explanation of why iron should be better protected from corrosive elements than steel. Each grain or cluster of grains is supposed to be surrounded by an "envelope of cinder" having greater resisting power than the iron. Cross sectional enlarged photographs of wrought iron which I have seen do not apear to show the cinder so distributed. On the contrary, the strings and layers of cinder seem to be rather "enveloped or surrounded" by iron, and in this position can hardly afford much protection to the metal.

The question of corrosion is one which has had the attention of our engineers and chemists for some time, in connection with which considerable data has been collected. Laboratory tests were made for some years with a view to comparing both materials under corrosive agencies common in practice and to obtain relative losses in weight under such conditions. The tests conducted by the United States Navy Department furnish interesting data on this point. As the original report is now out of print we have prepared an abstract of these results, which those interested may obtain by writing the National Tube Company, Pittsburgh, Pa. Such tests show some grades of iron to lose less and some more than soft steel, the difference being within 10 per cent. one way or the other. The effect of change in surroundings is very marked, and teaches caution in drawing conclusions from service tests where conditions are complicated and liable to local changes.

Pitting.

The question of pitting has been investigated under working conditions where it seemed reasonably certain that both materials were subject to the same conditions. For instance, iron and steel tubes purposely placed in yard engines together show, after three or four years, that the tendency to pit is about equal. The depth of pitting in steel seems to be in some way connected with the finish of the surface. This matter is under further investigation. We frequently have cases of iron couplings on steel pipe which show practically the same corrosion, depending on how active the surrounding solutions were.

A case in point has recently come up where an extra strong 3-inch presure line made up of iron and steel lengths showed serious internal pitting in places after one year's service. It happened this time that the leak occurred in the iron section.

In view of such evidence it looks as though Mr. Roe has exaggerated the difference between iron and steel to the prejudice of the latter. Iron appears to have at present slightly better initial protection against these destructive agencies than steel, and therefore has a somewhat better appearance under oxidizing influences for a short period. This, however, is misleading, as in the end experience shows little difference in ultimate results. It is not uncommon to find on examining such cases that the corroded pipe presumed to be steel turns out to be iron. This shows what an amount of prejudice exists in some minds on this question.

After nearly 20 years' experience with these materials in the manufacture of pipe the results lead us to believe that the time is not far distant when the demand for soft steel pipe will force us to abandon the manufacture of wrought iron entirely.

Partine.—The Foundry Specialty Company, Cincinnati, Ohio, is placing on the market a product which is of interest to many foundrymen. The aim in casting is to produce as nearly as possible a *fac-simile* of the design. If asked why castings are so often imperfect the expert molder will declare that the chief cause is to be found in the parting and facing preparations that are utilized. A good parting and facing will permit the pattern to be withdrawn without the slightest disturbance resulting to the face of the mold. With the discovery and manufacture of Partine the Foundry Specialty Company claims that a facing preparation has been made available that fully meets all the requirements of a perfect article and which at the same time is sold at a price to make its use economical in all kinds of casting. It has met with universal commendation by the molders who have had an opportunity to test it. Further, it is an American product and not imported.

In the United States many large power plants are constructed under the supervision of one or two experts and a large number of engineers whose training has not been specialized in this line of work. On the Continent of Europe, on the contrary, the work is made a specialty by itself, and it is thought that this difference in practice accounts in large measure for the general greater economy met in European stations, many of which consume from 9 to 10 pounds of steam per horse-power hour, as against usually 13 to 15 in American and England. The tendency of design, both here and abroad, is toward one large generating station, with distribution from a series of substations. In France the marine type of water tube boiler is being used to economize in floor space, though the necessity for that is less there than here, land here being more expensive.

The American Radiator Company.

The American Radiator Company, Chicago, has issued its seventh annual report, covering the operations of the fiscal year ending January 31, 1906. It shows the financial results of every year from the organization of the company. Following is a statement of net earnings for 1905 compared with 1904 and 1899:

	1899.	1904.	1905.
Net profits	$657,161.82	$703,930.14	$833,917.11
Less dividends	157,500.00	258,930.00	406,013.00
Balance	$499,661.82	$445,000.14	$427,904.11

The balance sheet is also given for every year from the organization of the company. Following are the figures for 1905 compared with 1904 and 1899:

Assets.

	1899. At close of fiscal year Jan. 31, 1900.	1904. At close of fiscal year. Jan. 31, 1905.	1905. At close of fiscal year Jan. 31, 1906.
Real estate, plants, machinery, patents, &c.	$6,499,811.71	$7,337,437.73	$7,600,853.43
Additions during year.	192,583.35	363,415.70	475,787.76
Totals	$6,692,395.06	$7,700,853.43	$8,076,641.19
Less depreciation	100,000.00	100,000.00	100,000.00
Net	$6,592,395.06	$7,600,853.43	$7,976,641.19
Cash	$209,373.90	$252,364.08	$376,120.68
Notes receivable	53,671.90	16,160.23	12,003.58
Stocks and securities.	7,550.00	.....	.....
Accounts receivable	878,652.82	1,820,145.45	2,151,952.92
Raw material, supplies and finished products	842,502.39	1,314,625.10	1,626,370.42
Total quick assets	$1,991,751.01	$3,403,294.86	$4,166,447.60
Total assets	$8,584,146.07	$11,004,148.29	$12,143,088.79

Liabilities.

Capital stock, preferred	$3,000,000.00	$3,000,000.00	$3,000,000.00
Capital stock, common.	4,893,000.00	4,893,000.00	4,922,300.00
Totals	$7,893,000.00	$7,893,000.00	$7,922,300.00
Accounts and bills payable	191,484.25	609,261.75	1,290,998.14
Totals	$8,084,484.25	$8,502,261.75	$9,213,298.14
Balance	499,661.82	2,501,886.54	2,929,790.65

From President Clarence M. Woolley's report to the stockholders the following extracts are taken:

"The fiscal year which closed January 31, 1906, has given larger results as regards volume of business and net profits than any of the preceding years.

"We have steadily increased the output in response to the larger demand, which is created by vigorous selling policies, assisted by the excellence of our products and maintained by honest business practice. Increases of production have resulted partially from the enlargement of plants, but principally as the effect of refinements in practice and the consequent addition to individual efficiency.

"The net profits for the year were $833,917.11. The aggregate profits for the seven years were $4,592,233.65. During this period $1,662,443 has been distributed to the stockholders in dividends and the balance, $2,929,790.65, has been reserved for working capital, which amount is very nearly equal to the entire issue of preferred stock.

"The foreign business continues to grow. The desirability of manufacturing in the various countries abroad has been satisfactorily demonstrated. The bulk and weight of our products necessitate excessive freight charges, while the vexatious delays of transportation add another obstruction, both of which are removed by availing ourselves of the advantages of producing locally in those countries where the consumption is sufficiently large to warrant it.

"The plant which was built in Germany has proved a success. The larger volume of business which has been obtained in the countries supplied thereby has necessitated increases each year, and the outlook for continued growth is quite as favorable as ever. The plant which was built in France continues to make progress. To satisfy the requirements of the territory supplied by this plant further additions are being made, although the growth has not been quite as rapid here as in the colder countries of the North. A large plant is being constructed in England which will enable the London branch to supply more promptly and advantageously the large volume of business which it has established in the British Isles, the Netherlands and Scandinavia.

"There still exists a prejudice in foreign countries against American methods of warming, but advancement is being realized as the result of persistent effort on the part of a comprehensive selling organization which operates in all of the European countries, with connections in Africa, Australia, Egypt, India, China and Japan. Advantage is not taken of natural conditions existing in foreign countries to manufacture our products until, after several years of contact, a sufficient demand is created to insure the success of such enterprises. In other words, we do not attempt to realize the obvious advantages of local production in foreign fields until the business has reached a sufficient volume to make it profitable to do so."

The Coal Situation.

In the order of their occurrence the most important developments in the coal situation in the past week were the meeting of Pittsburgh district operators at Pittsburgh March 9, the publication of the reply of the anthracite operators March 12 and the preliminary gathering of the representatives of the Miners' Union at Indianapolis for the convention which opens March 19. At the Pittsburgh meeting it was decided that all operators in that district should attend the Indianapolis conference of March 19. While the decision of the meeting on the question of wages was not made public, it has been stated that the sentiment was against granting the demand for an increase. Action to that effect had been taken by Ohio operators at a meeting in Cleveland a few days previous.

The reply of the anthracite operators to the demands of the miners rejects them all. The miners asked for a written agreement for one year, an eight-hour day, a uniform scale of wages throughout the anthracite regions, an increase of 10 per cent. to men working under contract and an additional 10 per cent. to men using safety lamps, the weighing of coal in all mines, with payment on the basis of a ton of 2240 pounds, the deduction of union dues from the wages of miners by the company, which should then pay the amount over to the union, and finally the abrogation of the board of conciliation.

The answer of the operators discusses the demands in order and gives reasons for refusing them. "We stand unalterably for the open shop," the answer says, "and again decline to make an agreement with the United Mine Workers of America, an organization controlled by a rival industry." This reference to a rival industry refers to the control of the United Mine Workers of America by the bituminous coal workers. The reply says that the expectation of the Anthracite Coal Strike Commission that a reduction from ten to nine hours would not result in any decrease in output has not been realized and that it is certain that reducing the breaker time to eight hours would decrease production and increase cost. The operators' counter proposition is that "the awards made by the Anthracite Coal Strike Commission and the principles upon which they were established by the commission and the methods established for carrying out their findings and awards shall be continued for and during a further term of three years from the 1st day of April, 1906."

A Pittsburgh dispatch of March 12 quotes a statement made by an officer of the Pittsburgh Coal Company to the effect that there will be no strike in the bituminous coal fields and that the differences between the miners and operators will be settled at the conference in Indianapolis next week on the basis of some advance. This statement was made in view of the refusal by the anthracite operators to accede to any of the proposals of the miners.

The L. K. Hirsch Company, Pittsburgh, dealer in pig iron and pig iron storage warrants, will remove its New York offices from the Empire Building, 71 Broadway, to the Produce Exchange. The company will also open an office in Philadelphia in the near future, in charge of Harry Krider, manager of the Max Solomon Iron Company, Pittsburgh.

THE IRON AGE

1855—1906.

New York, Thursday, March 15, 1906.

DAVID WILLIAMS COMPANY, ... PUBLISHER
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GEO. W. COPE, ... }
A. I. FINDLEY, ... }
RICHARD R. WILLIAMS, ... HARDWARE EDITOR

Report of the British Commission on Labor Troubles.

The report of the British Royal Commission on Trade Disputes and Trade Combinations has been made public. The commission was appointed in June, 1903, to inquire into and report upon the law relating to trade disputes. Fifty employers and 15 miscellaneous witnesses were examined. The trade unions took the position that the commission was likely to be prejudiced against them and refused to give any testimony, though from the tenor of the commission's report the representatives of labor had little to fear on this score. The recommendations are not in any sense hostile to unions, and in some particulars look to a relaxing of the stringency of some judicial decisions that have been given in the past few years. One important feature of the report is its emphatic support of the principle involved in the famous Taff Vale decision of the House of Lords. It had been freely claimed in recent political debates that in that decision the House of Lords reversed the intention of Parliament as expressed in the Trade Union act of 1871. The commission is firmly of the opinion that trade unions should not be restored to the status of irresponsibility they formerly enjoyed. On this point the report says:

> The objections against disturbing the law as laid down in the Taff Vale case appear insurmountable. There is no rule of law so elementary, so universal, or so indispensable as the rule that a wrongdoer should be made to redress his wrong. If trade unions were exempt from this liability they would be the only exception, and it would then be right that that exception should be removed. That vast and powerful institutions should be permanently licensed to apply the funds they possess to do wrong to others, and by that wrong inflict upon them damage, perhaps to the amount of many thousand pounds, and yet not be liable to make redress out of those funds, would be a state of things opposed to the very idea of law and order and justice.

Of the five members of the commission, which was composed of Lord Dunedin, Sir William Lewis, Sir Godfrey Lushington, Arthur Cohen and Sidney Webb, three united in the report. Sir Godfrey Lushington agreed to only four of the nine recommendations, and Sir William Lewis practically dissented from everything in the report, urging in his own report that, in view of the overwhelming evidence of the cruelty and oppression to which nonunionists are subjected at present, legislation should be considered to prohibit strikes against nonunion workers. The legislation recommended by the majority report is in substance as follows:

1. To declare trades unions legal associations.
2. To declare strikes, from whatever motive or for whatever purposes (including sympathetic or secondary strikes), apart from crime or breach of contract, legal, and to make the act of 1875 to extend to sympathetic or secondary strikes.
3. To declare that to persuade to strike—*i.e.*, to desist from working, apart from procuring breach of contract—is not illegal.
4. To declare that an individual shall not be liable for doing any act not in itself an actionable tort only on the ground that it is an interference with another person's trade, business or employment.
5. To provide for the facultative separation of the proper benefit funds of trade unions, such separation, if effected, to carry immunity from these funds being taken in execution.
6. To provide means whereby the central authorities of a union may protect themselves against the unauthorized and immediately disavowed acts of branch agents.
7. To provide that facultative powers be given to trade unions either (*a*) to become incorporated subject to proper conditions, or (*b*) to exclude the operation of section 4 of the Trade Union Act, 1871, or of some one or more of its sub-sections, so as to allow trade unions to enter into enforceable agreements with other persons and with their own members.
8. To alter the Conspiracy and Protection of Property Act, 1875, so that "watching and besetting" shall not be prohibited unless the person whose premises are watched apprehends that violence will be done.
9. To enact that an agreement or combination by two or more persons to do or procure to be done any act in contemplation or furtherance of a trade dispute shall not be the ground of a civil action, unless the agreement or combination is indictable as a conspiracy, notwithstanding the terms of the Conspiracy and Protection of Property Act, 1875.

While the effect of the recommendations is much impaired by the fact that they are made by a bare majority of the commission, the report is significant of the same tendency to favor trade unions in legislative enactments that is much in evidence in the United States. The ease with which the unions might convert all funds into benefit funds and thus put their resources beyond the reach of suits for damages is suggested by the fifth section, and section 9 further safeguards the union treasury by making an action for damages impossible unless a crime has been committed. Section 6 opens another door to immunity by making the self-serving declaration of the general officers of a union sufficient to save the union funds, no matter what damage may have been inflicted by a local union.

For the most part the remaining recommendations of the commission are in line with decisions of courts in the United States as to the rights of workmen to strike or to induce others to strike. The question of picketing is not fully dealt with. Under existing decisions in Great Britain picketing may under certain conditions be dealt with as a nuisance and may be restrained by injunction, as has also been held by a number of local courts in the United States.

A Wider Distribution of Activity.

A year ago the question was being asked whether the railroad demand which was credited with most of the prosperity the iron trade was then enjoying would soon grow into a general demand, drawing upon the producers of all forms of iron and steel. Though months were required for the tide to overflow into all the channels of trade it has been evident for some time that branches of the metal working industries that were not involved in the first movement are busier than they have ever been. The difference is illustrated by what is apparent in the trade of steel foundries that do a general jobbing business. From having chiefly locomotive and car work for most of 1905 they have been getting in recent months an increasing business in castings for machinery of various descriptions, including a large requirement in electrical lines. The electrification of portions of important steam roads and the active campaign of trolley line building that will make 1906 a record year in the demand upon the rail mills from this source, are large factors. But all other departments of the large electrical works of the country are being drawn upon as the introduction of electrical power in manufacturing of all descriptions becomes more general. The work done in increasing the capacity of iron and steel works, while not as imposing a programme as was being carried out in 1902 and 1903 has been by no means inconsiderable, and in the coming year will include some important operations both North and South.

The amount of work under way throughout the country in the building of new manufacturing plants and the

enlargement of those existing has been a very large contributor to the activities of boiler and engine works and of machine tool manufacturers. The conversion of large amounts of the floating capital of the country into fixed capital in the demands from such sources is in fact one of the phases of the present prosperity that has prompted a warning here and there.

The consumption of foundry iron, though it is no longer possible to approximate it as closely as formerly when stocks were reported, has been very heavy in recent months. That is a factor of no small significance, for the foundry trade is a good barometer. Its prosperity tells the story of a widespread and diverse demand growing out of favorable conditions, both general and local.

Imports of Manganese Ores and Metals.

It is interesting to note that despite the much talked of scarcity of manganese ores the imports last year were the heaviest on record, although the imports in 1900 were but a few tons less. The imports of manganese ore and oxides since the Government first returned separate statistics have been as follows:

Manganese Ore Imports by Years.

Calendar years.	Gross tons.	Calendar years.	Gross tons.
1897	39,574	1902	235,576
1898	114,885	1903	146,056
1899	188,349	1904	108,519
1900	256,252	1905	257,033
1901	165,722		

It is true that imports were heavier in the earlier part of 1905 than in the latter part, being 141,122 tons in the first half and 115,911 tons in the second half, but these imports in the second half were at the rate of 231,822 tons per year, a greater rate than shown in any preceding year except 1900 and 1902.

Manganese ore imports in January of this year amounted to 15,027 tons, or less than for any months but two in 1905. Nothing can be proved by this, however, as manganese ore is received very irregularly. In January, 1905, the imports were 31,419 tons, but in January, 1904, they were but 907 tons. The imports in the seven-month periods ending with January have been as follows:

	Gross tons.		Gross tons.
1903	122,594	1905	115,471
1904	82,367	1906	130,938

In this comparison also imports of manganese ore in recent times show up well. Finally we give the imports by months since the beginning of last year:

Manganese Ore Imports by Months.

1905.	Gross tons.		
January	31,419	August	21,848
February	10,600	September	25,358
March	25,945	October	6,661
April	18,231	November	20,603
May	34,791	December	18,205
June	20,136	Total for 1905	257,033
July	23,236	January, 1906	15,027

In the Government's monthly presentation of imports ferromanganese and spiegeleisen are reported under the head of pig iron, so that the most recent imports of manganese metals have not been published. The imports for the six fiscal years preceding June 30, 1905, have been as follows:

Imports of Manganese Metals.

Fiscal years.	Ferromanganese. Gross tons.	Spiegeleisen. Gross tons.
1900	10,684	13,615
1901	8,995	16,308
1902	37,618	31,416
1903	53,121	122,566
1904	23,903	50,620
1905	41,166	22,443

The domestic production of ferromanganese and spiegelesien has been as follows, separate figures for these grades having been collected only of late:

United States Production.

	Ferromanganese. Gross tons.	Spiegeleisen. Gross tons.
1904, first half	26,541	87,665
Second half	30,535	74,705
Year's total	57,076	162,370
1905, first half	35,221	90,113
Second half	26,965	137,684
Year's total	62,186	227,797

Imports of ferromanganese for the third quarter of 1905—the latest period for which official statistics are available—were 12,439 gross tons, equivalent to an annual rate of 49,756 tons, or slightly more than the rate in the fiscal year 1905. Of spiegeleisen imports none were reported for the third quarter of 1905. Computing 4 tons of spiegeleisen to equal 1 ton of ferromanganese, the imports of manganese metals in the fiscal year 1905 were the equivalent of 46,777 tons, and those of 1904 the equivalent of 36,558 tons of ferromanganese. Indeed, only in the fiscal year 1903 did the rate of metallic manganese imports exceed that for the third quarter of 1905. Again, computing 4 tons of spiegeleisen to equal 1 of ferromanganese the domestic production of both in 1905 was the equivalent of 57,749 tons of ferromanganese in the first half and of 61,386 tons of ferromanganese in the second half, thus also showing a considerable increase over 1904.

There is some reason to believe, from the figures presented of manganese ore imports, that the present scarcity, however acute it may be, is due more to increased consumptive demand than is generally credited. The recent advance in the price paid for domestic manganese ores by the leading consumer in the United States and the relaxation in phosphorus requirements are indications of the changed conditions.

The Future Demand from China.

The promised awakening of China, concerning which many forebodings are heard, in reality has a bright and inspiring side in its prospect of a great market for manufactures. If predictions come true it will be Japan over again on a bigger scale, though less rapid, perhaps, as more unwieldy objects move more slowly. Before China can arrive at the point in civilization where Japan is to-day it must procure from modern nations the means of developing its people and its resources. Its industries must be developed along twentieth century lines, with the machinery and tools and materials which an undeveloped people cannot hope to produce until its civilization has passed through many stages of evolution.

As the Chinese make progress and acquire greater means they will require manufactured products of other countries in ever increasing volume. As they proceed with their known wonderful adaptability and become producers of the goods which they now purchase they must depend upon modern machinery purchased abroad. Their railroads must be equipped mainly from the mills and shops of Western nations. Finally they will reach the point when they can build machinery for themselves. The thought of this dormant nation with its 400,000,000 people awakened after long centuries to Western ideas is fraught with prophecies of immense business with the United States. The boycott of to-day, the antiforeign feeling, the general unrest of the Chinese are mere symptoms of the existence of the desire for a new and modern China, to procure which all these feelings will be forgotten in the necessity of going to America and other outside nations for the wherewithal with which to work out the new ambition. The promised demand from this great market is not for this year, perhaps hardly for the decade now beginning, but it is inevitable. Before China becomes

a "peril"—and the "peril," if it ever shall exist, will be industrial rather than military—other countries must be immeasurably enriched in putting the power in the Celestial Empire's hands. To develop manufacturing industries, agriculture, mining and shipping will require the expenditure of immense sums in the markets of the world.

Regulating Assignments of Wages.

In some localities the practice of workmen assigning their wages has become such an annoyance to employers that manufacturing and other establishments having a large working force have been compelled to post notices making such assignment sufficient cause for immediate dismissal. A bill before the Massachusetts Legislature apparently contains at least a partial antidote to the evil in its provision that a standard form of assignment shall be employed and that such transactions to be binding on the borrower must be publicly registered. This bill is being fought with much earnestness by those whose business depends upon assignments of wages to secure sales on the installment plan or loans of money. They assert that it would destroy their business if it should become a law. If this is true the law would certainly fill a great need. If an employee is actually compelled to assign his wages to secure necessities no more harm could be imposed by publicity than results to-day from the necessity of recording mortgages on personal property as well as on real estate. Needed protection would be accorded to a large percentage of those persons who avail themselves of what seems an easy way to secure credit or loans of money and who sign their names without having the remotest idea of the meaning of an assignment of wages, and oftentimes without knowing that they are actually depriving themselves of their income. While ignorance is no excuse in the eyes of the law, neither is there injustice in a law which prevents one class of persons from taking advantage of the weaknesses of another.

The Bankruptcy Law to Stand.

WASHINGTON, D. C., March 13, 1906.—Business men in all lines will receive with genuine satisfaction the assurance that the present Congress will not pass any of the pending bills providing for the repeal of the Federal bankruptcy law. This outcome was fully foreshadowed at a hearing given by the House Judiciary Committee on a series of 15 bills now pending before it, the majority of the measures providing for the unconditional repeal of the law, while the others embrace amendments of more or less importance, one of the amendatory bills being a comprehensive measure drafted by a joint committee representing the American Bar Association, the National Association of Credit Men, the National Board of Trade, the Merchants' Association of New York and the Commercial Law League of America. Representatives of all these organizations were present.

Only One for Repeal.

Arguments were made in opposition to the repeal of the law by Congressmen Esch of Wisconsin, Taylor of Ohio and Sherley of Kentucky; Charles E. Meek and W. A. Prendergast of the National Association of Credit Men; Edward D. Page, representing the Merchants' Association of New York; J. W. Kline of the Chicago Credit Men's Association; George W. Carr of Philadelphia, representing the Commercial Law League of America, and others, while Representative Sims of Tennessee appeared as the sole advocate of the proposition to strike the law from the statute books.

The principal argument in favor of the retention of the present law was made by Mr. Page, chairman of the Committee on Banking and Commercial Law of the Merchants' Association. He asserted that the plea that the present law has served its purposes seems to be based upon the misconception that the bankruptcy statute is a clearing house for the unfortunate. As a matter of fact it is the natural permanent basis for the extension of credit, supporting the trade in the smaller and more distant localities, which are generally poor in capital and lacking in credit. Under the old system of State laws manufacturers and jobbers were obliged to consider the local conditions rather than the ability of a customer to meet his bills, and in some States, notably Texas and California, many careful merchants would not extend credit to any one. To-day the manufacturer or dealer is obliged to keep posted on but one law—namely, the Federal statute, which guarantees uniform treatment to all creditors in case of disaster. One highly important feature of the operation of the present law has been to increase greatly the prosperity of such States as Texas and California, as it has provided a credit system under which their trade has grown enormously.

Proposed Amendments.

Mr. Kline of the Chicago Credit Men's Association made an argument in which he explained the bill drafted by the joint committee, above referred to, and presented reasons why its passage would strengthen the existing law. The more important of the proposed amendments are intended, first, to check the discharge of dishonest debtors, by putting into the hands of creditors new and available objections; second, to make it more easy to punish commercial criminals in the Federal courts; third, to meet existing criticisms growing out of too liberal allowances to receivers, and, fourth, to widen the law as to insolvent corporations. The chief advantages of the present law Mr. Kline summarized as follows:

> It practically prevents preferences. It gives to honest debtors a discharge available throughout the United States. It has largely put an end to the often scandalous and usually intrafamily administration of insolvent estates under State laws. It has greatly reduced the expenses of administering such estates. It requires prompt administration. It puts such administration in the control of an officer chosen by the creditors, not, as under most State laws, chosen by the debtor or his attorney. It suggests and makes easy searching examination into the affairs of the debtor and the cause of his bankruptcy. It encourages adjustments out of court and compositions in court. It has stimulated credit.

E. C. Brandenburg, in charge of bankruptcy matters in the Department of Justice, urged the committee to retain the present statute and gave it as his opinion that it was of far more importance to prevent the repeal of the present law than to amend it in any particular.

Members of the committee expressed their surprise that only a single advocate of repeal should appear at the widely advertised hearings and the showing made by the friends of the statute has rendered it exceedingly improbable that any further action will be taken on the pending repeal bills.

W. L. C.

The McClure Company.—The McClure Company, tin plate manufacturer, with warehouses in Pittsburgh and Philadelphia and mills at Washington, Pa., announces that its present quarters at 211-215 Second avenue, Pittsburgh, are no longer large enough to accommodate its growing business and on April 1 will move to 12-14 Fourth avenue and 29-31 Third avenue, where a much larger building has been secured and which will very nicely meet the necessities of the growing trade. This company manufactures tin and terne plate at its own mills in Washington, Pa., large stocks of which are carried in its warehouses in Pittsburgh and Philadelphia, in addition to stocks of tinners' supplies.

The Fairmont Steel Company, Fairmont, W. Va., after an idleness of three years, has resumed operations, manufacturing light steel T rails, from 16 to 30 pounds per yard. Complete joints, frogs and switches will also be furnished. John A. Clark is president of the company, Lewis C. Millholland is general manager and M. H. Joy has been made superintendent and placed in full charge of manufacturing operations.

The Supply and Machinery Conventions.

ST. LOUIS, Mo., March 13, 1906.—(*By Telegraph.*)—Judging from the large number of members already here the conventions of the American Supply and Machinery Manufacturers' and the Southern Supply and Machinery Dealers' associations, which are to open here to-morrow, will be more liberally attended than was anticipated by even the most sanguine of the promoters of these meetings. Trains from all sections of the country are contributing continually to the number, and when the joint opening session of both associations marks the beginning of the three days' meetings an attendance of 200 or more delegates will doubtless grace the occasion.

Not only will these meetings be important from the standpoint of large attendance but there is every indication to predict that they will prove extremely interesting in the matter of topics brought up for debate. In this respect the meetings are somewhat unique, inasmuch as the suggestion of the topics has been left entirely to evolve itself at the meetings. The programme of both associations gives no clew whatever to the various subjects to come up for discussion. It is a matter of fact that at this writing, on the eve of the meetings, not even the officers of the associations know specifically what the proceedings may bring forth.

The outcome will prove of great importance to the supply and machinery trade of the country. On one side there is a possibility of action, which may stir things up again to a very interesting point, while on the other there are indications that strong hands will assume control and so shape the course for the coming year that perfectly harmonious and united effort will strive for the betterment of the relations between the merchant and the manufacturer.

To-day the executive committees of both organizations held sessions with a view of outlining a plan of campaign for the meetings. At their close it was stated that nothing had developed of a definite nature for announcement at this time.

During the last year the Manufacturers' Association has quietly assumed a growth of more than 75 members, including many of the most prominent supply manufacturers of the country. Machine tool builders are not represented, owing to the fact that they have a strong organization of their own. Throughout the greater portion of the last year the Manufacturers' Association limited its scope to the honorary members or manufacturers' contingent of the Southern Dealers' Association. Recently, however, the bars were taken down and membership was built up regardless of former affiliation with the Southern Dealers' Association. Entrance of the National Supply and Machinery Dealers' Association into the field and its healthy growth justified this move.

During the last year the Southern Supply and Machinery Dealers' Association has not shown any marked aggressiveness along the lines taken up at New Orleans several years ago and followed out so persistently during the two years' presidency of Peter E. Blow. This policy, it will be recalled, advocated the billing of all goods sold directly by a manufacturer in any territory covered by the association through some dealer, being a member of the association. The National Supply and Machinery Dealers' Association, it will be remembered, is working along different lines by simply advocating the adoption by manufacturers of the resale prices.

There has been some talk among the members of the Southern Dealers' Association of again electing Peter E. Blow to the presidency of the organization. Mr. Blow has stated, however, that he will not accept if it is offered him. What is done in this matter will indicate pretty clearly the trend of sentiment among the members concerning the most vital principles of the association.

Under present conditions there is nothing for the Manufacturers' Association to do but hold back and await developments. This is exactly what is being done, but there are strong minds shaping the movements of this organization which will assert themselves when the opportunity or occasion presents itself.

To-morrow morning the session will be an open one, attended by members of both associations and any one else who wishes. Nothing but the preliminary fanfare of addresses of welcome and responses is expected at this meeting. Then both associations will go about their respective duties and all the remaining sessions will be strictly executive.

On Thursday afternoon there will be a joint meeting of the associations, which will give the members of both bodies an opportunity of telling each other what they resolved for one another in their private executive sessions. Then there will be more separate sessions, and interspersed throughout the meetings will be various entertainment features and a banquet for the promotion of sociability and good fellowship.

OBITUARY.

THOMAS E. DUFFY, chief engineer of the Edison Electric Illuminating Company, Brooklyn, and who was well known to machinery men and engineers throughout the country, and especially in the New York district, died March 9 after a short illness.

DAVID ROUND, senior member of the firm of D. Round & Son, Cleveland, Ohio, died on March 8, aged 65 years. He had been confined to his home since last July, suffering from the effects of an operation, but no serious results were expected. A week before his death he contracted a cold which rapidly developed into congestion of the lungs. Mr. Round took up his residence in Cleveland in 1869 and with one small forge laid the foundation of the chain and hoisting machinery plant which bears his name. He was also president of the Atlantic Foundry Company and a director of the South Cleveland Banking Company. He leaves a widow, one son and four daughters.

WILLIAM DELAMATER, for many years a partner in the Delamater Iron Works, New York, died March 9 from paralysis, aged 54 years. He was a bachelor.

GEORGE K. HOSFORD, resident manager at Cleveland, Ohio, for Rogers, Brown & Co. from 1895 to 1904, died at his home in that city on March 7. Mr. Hosford was stricken with paralysis about two years ago, and was forced to give up his work. He spent the winter of 1904 and 1905 in California and showed some slight improvement but did not recover his health. He was one of the best known pig iron men in the Central West and had had a wide experience both in blast furnace management and in the selling department of the business. He served in the Civil War and after its close engaged in iron manufacture, being connected with the management of furnaces in the Hanging Rock district of Ohio, at Clarksville, Tenn., and elsewhere. For some years he conducted a pig iron brokerage business in Cincinnati and gave this up in 1895 to accept the appointment at Cleveland with Rogers, Brown & Co. Not only was Mr. Hosford thoroughly conversant with the manufacture and sale of pig iron, but his winning personality had much to do with the success of the Cleveland office of his firm, this agency developing into one of the most important of the Rogers, Brown & Co.'s list. Mr. Hosford was born at Bath, N. H., in 1836.

CAPT. JOHN PENGILLY, a well-known Lake Superior mine manager, died in Arizona from pneumonia last week, aged 53 years. As a conclusion to a long negotiation he left Duluth a few weeks ago to demonstrate the caving system of mining at the Green Consolidated copper mines at Cananea, Mexico. He was born in Cornwall and secured his early training there. Coming to the United States he first worked in the Pennsylvania coal mines. Service on the Marquette and Gogebic ranges followed. Next he went to the Vermilion range, in 1888, and took charge of the Chandler mine. Positive of opinion in matters social and political, as well as mining, he attained great prominence and influence in the old days of the Minnesota Iron Company under Joseph Sellwood and D. H. Bacon. When the Oliver Iron Mining Company took control he remained for a time, but some two years ago resigned his position as manager of the Minnesota and Chandler mines and retired to a farm at Northfield, Minn.

PERSONAL.

E. H. Pasmore, formerly manager of the Detroit branch of the Crucible Steel Company of America, has resigned his connection with that company to become manager of the Chicago sales department of the Columbia Tool Steel Company, Chicago Heights, Ill.

C. L. Haight of Yonkers, N. Y., who purchased and built machinery for a horseshoe plant in Australia, expects to return home about July 1, as the plant is now in operation and making horseshoes.

C. H. Zehnder, manager of the Philadelphia office of Rogers, Brown & Co., will retire April 1 to attend to his own extensive interests. He is president of the Alleghany Ore & Iron Company, the Wilmington Iron Company and the Austen Coal & Coke Company, and will maintain an office in the Pennsylvania Building, Philadelphia, in which the offices of Rogers, Brown & Co. are located. Mr. Zehnder will be succeeded as Philadelphia manager of Rogers, Brown & Co. by Noah H. Swayne, 2d, president Nittany Iron Company, Bellefonte, Pa., and the Alabama & Georgia Iron Company.

C. A. Hamilton, formerly manager of the Pittsburgh office of the International Steam Pump Company, has assumed the management of the Wisconsin Engine Company, Corliss, Wis., which was organized by the purchasers of the defunct Brown-Corliss Engine Company.

President Thomas F. Cole of the Oliver Iron Mining Company, who was recently elected president of the Butte Coalition Mining Company, is now at Bisbee, Ariz., looking over copper properties. He will spend a few weeks in California before returning to Duluth.

Dr. Nelson P. Hulst of Milwaukee, formerly vice-president of the Oliver Iron Mining Company at Duluth, delivered an address recently before one of the clubs of Duluth on "The Metals in Human Progress."

Edwin N. Ohl, Pittsburgh, has been elected president of the Fruit-Ohl Hardware Company, Sharon, Pa.

Frank L. Brown has been appointed chief clerk of the operating department of the Republic Iron & Steel Company, headquarters in the Frick Building Annex, Pittsburgh.

A. C. Dinkey, president of the Carnegie Steel Company, Pittsburgh, has returned from an extended visit in Florida.

Government Testing of Fuels and Structural Materials.

Good progress is being made in that department of the work of the United States Geological Survey which has to do with the testing of fuels and structural materials. At the fuel testing plant on the Exposition grounds at St. Louis Dr. Joseph A. Holmes is still prosecuting the work that was begun during the St. Louis Exposition. In the department of the inquiry which relates to structural materials the investigation deals with the behavior of structural materials in actual use. The lines in which work is now under way are cement, sand from crushed stone, steel and reinforced concrete. In order that the work may be kept as closely as possible to the engineer and keep in line with investigations already in progress under the auspices of associations the following persons have been appointed as members of the National Advisory Board on Fuels and Structural Materials:

From the American Institute of Mining Engineers.—John Hays Hammond, past president, Empire Building, New York; Robert W. Hunt, Chicago; B. F. Bush, manager and vice-president Western Coal & Mining Company, St. Louis, Mo.

From the American Institute of Electrical Engineers.—Francis B. Crocker, professor of electrical engineering, Columbia University, New York; Henry C. Scott, superintendent of motive power, Interborough Rapid Transit Company, New York.

From the American Society of Civil Engineers.—C. C. Schneider, president, chairman Committee on Concrete and Reinforced Concrete, Philadelphia, Pa.; George S. Webster, chairman Committee on Cement Specifications, City Engineer, Philadelphia, Pa.

From the American Society of Mechanical Engineers.—W. F. M. Goss, dean of the School of Engineering, Purdue University, Lafayette, Ind.; George H. Barrus, Boston, Mass.; P. W. Gates, Chicago, Ill.

From the American Society for Testing Materials.—Charles B. Dudley, president, Altoona, Pa.; Robert W. Lesley, vice-president, Philadelphia, Pa.

From the American Institute of Architects.—George B. Post, past president, New York; William S. Eames, past president, St. Louis, Mo.

From the American Railway Engineering and Maintenance of Way Association.—H. G. Kelley, president, Minneapolis, Minn.; Julius Kruttschnitt, director of maintenance and operation, Union Pacific Railroad, Chicago, Ill.; Hunter McDonald, past president, chief engineer Nashville, Chattanooga & St. Louis Railway, Nashville, Tenn.

From the American Railway Master Mechanics' Association.—J. F. Deems, general superintendent of motive power, New York Central Lines, New York; A. W. Gibbs, general superintendent of motive power, Pennsylvania Railroad, Altoona, Pa.

From the American Foundrymen's Association.—Richard Moldenke, secretary, Watchung, N. J.

From the Association of American Portland Cement Manufacturers.—John B. Lober, president, Philadelphia, Pa.

From the Geological Society of America.—Samuel Calvin, professor of geology, University of Iowa, Iowa City, Iowa; I. C. White, State Geologist, Morgantown, W. Va.

From the Iron and Steel Institute.—Julian Kennedy, Pittsburgh, Pa.; C. S. Robinson, general manager Colorado Fuel & Iron Company, Denver, Col.

From the National Association of Cement Users.—Richard L. Humphrey, president, St. Louis, Mo.

The Third Pan-American Conference.

The complete list of the members of the American delegation to the third Pan-American conference, called to meet at Rio de Janeiro next July, has just been announced at the State Department at Washington. There are to be five delegates to the conference, a secretary and an interpreter. The President and Secretary of State, who are greatly pleased with the *personnel* of the delegation, believe that it will be able to accomplish much at Rio toward strengthening the ties between this country and its southern neighbors. The various committees, composed of diplomats to this country from Pan-American Governments, already noted in these columns, are making rapid progress in the arrangement of a programme and regulations and rules for the conference. William I. Buchanan of New York, formerly Minister to Argentina and first American Minister to Panama, will be the head of the American delegation. Mr. Buchanan was a director of the Pan-American Exposition at Buffalo and was one of the delegates to the second Pan-American conference in the City of Mexico in 1902. The other members of the delegation are Edmund J. James, president of the University of Illinois; Leo S. Rowe, professor of political economy, University of Pennsylvania; Tulio Larrinaga, civil engineer of Porto Rico, Resident Commissioner from Porto Rico to the United States; James S. Harlan of Illinois, a lawyer in Chicago, and son of Associate Justice John M. Harlan of the United States Supreme Court. The various members of the delegation have been appointed with regard to their special qualifications for this important work.

In power transmission work spans have occasionally to be dealt with which cannot well be carried out with copper conductors. Resort is then had to steel cables. The use of such cables would appear to involve excessive pressure drops, because to the greater resistance of the steel must be added a considerable inductive drop. In order to investigate the matter the German General Electric Company has performed some experiments, the results of which show that the drop with alternating currents is not so much in excess of that with direct current as might have been expected. The difference increases with the cross section of the conductor and with the amount of current carried, but decreases for a given cross section, with decrease in the size of the strands and increase in their number.

A report on "Trade Conditions in Mexico," by Charles M. Pepper, special agent, has been issued by the Department of Commerce and Labor at Washington, making a pamphlet of 40 pages. The author says that while the trade of the United States with Mexico grows steadily Europe still has too large a share.

The Illinois Coal Situation.

Indications point to a strike of Illinois coal miners April 1 unless something unforeseen happens to prevent. At a meeting held at Chicago last week the operators aligned themselves in solid front against granting the miners' demands, either in whole or part, and furthermore agreed to bolt the coming Indianapolis convention of bituminous operators of the country in case a compromise settlement is accepted. The enormous production of coal during the past two or three months, which has flooded the market with a quantity so great as to require extremely light production through the summer months, and possibly in some cases an absolute shutdown, is given as one of the reasons for the attitude taken by the Illinois operators.

The storage of coal, which has been going on at a tremendous rate during the past two months, has reached very large proportions in Western industrial centers, and a demoralized market seems to be the inevitable prospect. Coupled with the market reasons is a resentment against what is considered undue exercise of dominance by the Western Pennsylvania operators, who, it is claimed, are seeking to effect a settlement with the miners which would be advantageous to the large operators and ruinous to the smaller ones. The Illinois owners take the stand that, while conditions in the East may be such as to warrant an increase in wages, they do not in the West, and the Eastern men are therefore not justified in taking the whole control of the situation unto themselves.

The dispute over the shot firers' law, which only exists in Illinois, is regarded as another thing which will block a settlement. The operators claim that this law means an added cost of production of from 2 to 10 cents a ton, and they will demand that the present basic mining rate of 52 cents a ton be reduced, in consideration therefor, to 47 cents. With an annual production in Illinois of 37,000,000 tons of coal, this reduction would mean a saving of nearly $2,000,000.

Some Motor Vehicle Statistics.

According to official figures, as sworn to in the United States Circuit Court, New York, the total number of motor vehicles manufactured and imported under license from January 1, 1903, to January 1, 1906, was 41,696. The valuation of these cars was $63,141,437.22, and the royalties paid on them to the licensors was $814,183.52. All of the figures given represent cars actually sold.

The increase of production in 1904 over 1903 amounted to 30 per cent. in the number of vehicles and the increase in the value of the gross sales was 58 per cent.

The increase of 1905 over 1904 in the number of vehicles was 32.5 per cent., while the increase in the value of the product sold rose 66.2 per cent.

The total business in 1905, according to the testimony, amounted to 17,840 vehicles, having a valuation of $31,814,758.99.

These figures reveal some averages of peculiar interest. Taking the total number of cars produced by the licensed makers and their selling prices it is shown that the average selling price for cars of all sorts in 1903 was approximately $1170, in 1904 the average price was $1422 and in 1905 it was $1784. For the three years—1903, 1904 and 1905—the average selling price of domestic cars was $1429 and of imported cars $6710.

Except in very extreme cases it does not pay to reduce boiler pressures in order to take care of light loads. If, however, the pressure delivered to the piston can be reduced by throttling there is usually a decided advantage, because the heat units in the steam are retained at a pressure lower than that at which they were generated, and the result is a slight superheat. Tests made by Willans & Robinson of England tend to show that this gives better results than does an automatic cutoff. The ideal arrangement seems to be to use the throttling for loads up to about quarter cutoff, and then to make use of variable cutoff for all heavier loads. A newly designed shaft governor effects this automatically by giving a negative lead up to nearly quarter cutoff, after which it becomes positive. This makes the engine run more quietly and in addition gives better economy.

New York State Iron Ore Resources.

The Schenectady *Star* discusses the awakening interest in the iron ore resources of the State of New York. It says:

"The State geologist has received numerous requests for information as to the locality of deposits and the character and quality of the ore to be found in the various veins that are known to exist and have been worked to some extent, as well as to the possibility of working those which have been discovered but remain unworked. As the only comprehensive published pamphlet the State has to distribute was the State Museum Bulletin of 1889, which is now out of print, another investigation has been begun and placed in the hands of D. H. Newland, and field investigations are now being made in the Adirondack region.

"According to the last report of the State geologist the iron ores of the Adirondacks have been the subject of special study. Field investigation has begun in the northern districts of Clinton County, where the geologic conditions surrounding the ore bodies appear to be less complex than in the districts farther south. The ores of this section occur on the outer slopes of the Adirondack uplift. The country rock is always gneiss, though showing considerable variation in composition and texture. A number of mines occur in this vicinity which have been exploited at different times in the past. An endeavor was made to locate these deposits, as far as possible, and to obtain a set of specimens illustrative of their character and geologic surroundings. A short visit was also paid to the old mines in the Saranac Valley. With the exception of the deposits of titaniferous ores at Split Rock and Lake Sanford none of the mines in Essex County and other sections of the Adirondacks was examined and another season will be required to complete the field work."

The new pumping station for supplying the city of Schenectady is operated by electric motors and is capable of pumping 24,000,000 gallons of water per day against a head of 110 pounds. The pumps consist of two 18-inch two-stage vertical shaft Worthington turbines, each consisting of an outer casing, inside which is a set of fixed diffusion rings and the impeller. Water is drawn through a 42-inch suction pipe from two wells 50 feet in diameter. The vertical shafts of the pumps are direct coupled to the rotors of two 800 horse-power 550-volt three-phase induction motors, operating at 40 cycles per second and a speed of 800 revolutions per minute. The current is supplied by a 10,000-volt transmission line from the Schenectady Illuminating Company, obtaining power from Spiers Falls. As a safeguard against possible stoppage the lines are also connected with stations of the General Electric Company.

The Lackawanna Steel Company has been gradually increasing its steel output at Buffalo and it is expected that March will show a record production. No. 10 open hearth furnace will be completed this week and No. 11, the last of the five furnaces laid out to be added to the original block of six, will probably be started this month.

The Pittsburgh Steel Construction Company, Lewis Building, Pittsburgh, works at Economy, Pa., has recently taken contracts for a large tonnage of structural steel for mill buildings. This company is operating its works to full capacity and contracts now in hand will keep the plant busy for a considerable period.

The new plant of the Fort Pitt Steel Castings Company, at McKeesport, Pa., is nearly finished and will be in operation in a short time. W. L. Curry is president.

Pig Iron Production Stationary.

For February, with only 28 days, the production of pig iron naturally shows a falling off from the total for the 31 days of January, yet the daily average output in February was about 1½ per cent. greater than that of January. The weekly capacity of furnaces active on March 1 was 479,737 tons, or a trifle less than the capacity reported active on February 1, which was 482,156 tons. The statistics below show that the total production of coke and anthracite furnaces in February was 1,894,032 tons, as against 2,068,893 tons in the 31 days of January. A number of furnaces had difficulties in February and thus the total is not quite up to what was promised by the capacity of furnaces active at the beginning of the month. Some of the steel companies produced in February at a rate less than the rate of January, while the merchant furnaces produced at a greater rate. The number of active coke and anthracite furnaces on March 1 was 300, or four more than on February 1.

The following table shows the production for February as compared with the records for the preceding four months:

Monthly Pig Iron Production.—Gross Tons.

	October. (31 days)	November. (30 days)	December. (31 days)	January. (31 days)	February. (28 days)
New York	111,503	113,098	120,016	119,097	121,484
New Jersey	27,292	28,657	21,548	16,259	18,280
Lehigh Valley	53,028	53,245	57,503	56,215	55,218
Schuylkill Val.	40,390	36,929	41,150	48,674	47,852
Lower Susquehanna and Lebanon Val.	71,901	68,400	65,907	75,214	57,979
Pittsburgh dis.	495,379	466,457	488,346	511,941	454,611
Shenango Val.	169,388	165,876	176,009	177,467	153,551
West. Penn.	107,880	106,327	114,559	109,695	105,177
Md., Va. and Kentucky	81,539	84,209	79,749	83,704	75,251
Wheeling dis.	110,736	114,448	120,147	113,611	114,324
Mahoning Val.	166,465	154,363	162,052	162,075	148,508
Central and North. Ohio	162,452	162,763	173,453	162,938	154,298
Hocking Valley and Hanging Rock	27,796	26,924	33,902	34,656	32,514
Ill., Mich., Minn., Wis., Mo. and Col.	251,864	267,210	225,947	222,736	187,495
Alabama	144,804	147,299	137,560	141,773	134,792
Tennessee, No. Carolina and Georgia	30,757	22,340	27,870	32,838	32,698
Totals	2,053,174	2,013,635	2,045,718	2,068,893	1,894,032

Production of Steel Companies.—Returns from all the plants of the United States Steel Corporation, the Cambria, Pennsylvania, Maryland, Lackawanna, Wheeling, Ashland, Republic, Jones & Laughlin, La Belle, Bethlehem, Calumet and Colorado companies show the following totals of product month by month. We present also separately monthly figures of the production of spiegeleisen and ferromanganese, which is included in the total:

Production of Steel Companies.—Gross Tons.

	Pig.—Total production.			Spiegeleisen and ferromanganese.	
	1904.	1905.	1906.	1905.	1906.
January	502,904	1,129,042	1,358,015	21,002	26,305
February	756,260	1,027,937	1,216,760	22,431	26,988
March	913,412	1,232,255	.....	21,280	....
April	974,006	1,222,710	.....	20,038	....
May	927,534	1,287,438	.....	24,732	....
June	788,822	1,149,404	.....	21,761	....
July	694,892	1,114,409	.....	31,220	....
August	747,570	1,186,050	.....	27,461	....
September	936,494	1,262,033	.....	21,645	....
October	971,447	1,370,960	.....	26,799	....
November	962,384	1,334,644	.....	23,776	....
December	1,019,841	1,356,962	.....	29,481	....

Among furnaces blown in in February are one Wharton in New Jersey, West End in Virginia, one Columbus and River in Ohio, Bird in the Hanging Rock district, one Iroquois in Illinois, one Hubbard in the Mahoning Valley, Central and one Alice in Alabama. Among furnaces blown out in February are one Colorado, one Edgar Thomson in the Pittsburgh district, one Johnstown in western Pennsylvania, Gem in Virginia, one Clifton in Alabama.

The table below gives the actual capacity of the furnaces producing coke and anthracite pig iron on March 1 and February 1, in gross tons.

Coke and Anthracite Furnaces in Blast.

Location of furnaces.	Total number of stacks.	March 1. Number in blast.	March 1. Capacity per week.	February 1. Number in blast.	February 1. Capacity per week.
New York:					
Buffalo	12	12	26,099	12	26,540
Other New York	10	4	4,270	4	3,770
New Jersey	8	4	5,382	3	3,360
Spiegel	2	1	182	1	182
Pennsylvania:					
Lehigh Valley	27	18	13,797	18	12,694
Spiegel	2	2	433	2	490
Schuylkill Valley	13	11	11,917	11	10,995
Low. Susquehanna	10	5	6,358	5	7,294
Lebanon Valley	10	10	7,518	10	8,430
Spiegel	1	1	619	1	616
Pittsburgh dist	40	38	109,844	39	112,105
Spiegel	4	4	3,808	4	3,496
Shenango Valley	20	19	38,388	19	40,082
West. Penn	24	18	26,292	19	27,031
Maryland	5	4	6,930	4	7,595
Wheeling dist	14	14	28,910	14	29,055
Ohio:					
Mahoning Valley	16	16	38,327	15	36,573
Cent. and Northern and Michigan	19	19	40,498	17	38,472
Hocking Valley and Hanging Rock	12	11	8,867	10	8,058
Illinois	19	18	33,244	16	38,651
Spiegel	2	2	1,241	3	1,396
Minnesota	1	1	1,260	1	1,277
Wisconsin	5	5	5,706	5	5,113
Missouri	1	1	1,003	1	1,134
Colorado	4	3	4,003	3	5,432
Spiegel	1	0	0	1	252
The South:					
Virginia	23	14	10,835	14	9,688
Kentucky	7	2	1,234	2	1,362
Alabama	46	28	33,748	27	32,011
Tennessee	16	14	8,174	14	8,152
Georgia	1	1	850	1	850
North Carolina	1	0	0	0	0
Totals	376	300	479,737	296	482,156

For a series of months the active coke and anthracite capacity fluctuated as follows in gross tons:

	Capacity per week.		Capacity per week.
March 1	479,737	January 1, 1904	185,636
February 1	482,156	December 1, 1903	244,156
January 1, 1906	463,673	November 1	273,715
December 1, 1905	475,814	October 1	353,142
November 1	460,449	September 1	360,197
October 1	445,468	August 1	353,681
September 1	412,563	July 1	384,825
August 1	410,088	June 1	388,178
July 1	408,617	May 1	373,496
June 1	443,092	April 1	386,215
May 1	452,031	March 1	347,424
April 1	439,564	February 1	335,339
March 1	403,157	January 1, 1903	346,073
February 1	405,792	December 1, 1902	336,617
January 1, 1905	377,879	November 1	330,110
December 1, 1904	357,846	October 1	337,837
November 1	334,249	September 1	328,243
October 1	319,249	August 1	328,745
September 1	291,573	July 1	303,793
August 1	246,092	June 1	337,492
July 1	272,301	May 1	337,627
June 1	336,107	April 1	331,140
May 1	368,244	March 1	316,039
April 1	337,257	February 1	325,440
March 1	308,751	January 1, 1902	291,992
February 1	273,692		

The active officials of the Republic Iron & Steel Company, most of whose headquarters are in the Frick Building Annex, Pittsburgh, are as follows: John A. Topping, president; Charles Hart, vice-president and general manager; John F. Taylor, vice-president and treasurer; William H. Hassinger, vice-president; T. J. Bray, assistant to the president; T. W. Guthrie, assistant to the president; H. R. Moore, traffic manager; H. L. Rownd, secretary and auditor; Severn P. Ker, general sales agent; R. E. Jones, solicitor; W. L. Lee, purchasing agent, and George S. Lacy, assistant purchasing agent.

NEWS OF THE WORKS.

Iron and Steel.

Central Furnace of the Central Iron & Coal Company, Tuscaloosa, Ala., which went out in December, 1905, was blown in February 7, 1906.

Bessie Furnace, New Straitsville, Ohio, operated by the Bessie Ferro-Silicon Company, Columbus, Ohio, was blown out for relining February 13 and on February 27 was blown in. The work was pushed night and day and it is believed a record was made for rapid relining.

Bird Furnace of the Bird Iron Company, Ironton, Ohio, formerly known as Lawrence Furnace, was blown in February 12. It has a daily capacity of about 140 tons.

One Clifton furnace of the Alabama Consolidated Coal & Iron Company at Ironaton, Ala., was blown out for repairs February 15, 1906.

One Alice furnace of the Tennessee Coal, Iron & Railroad Company, at Birmingham, Ala., was put in blast in February.

The recently organized Chattanooga Iron & Coal Company, Birmingham, Ala., has acquired the furnace at Chattanooga, Tenn., formerly owned by the Chattanooga Blast Furnace Company, and the furnace will be blown in about April 1, after having been rebuilt and equipped with considerable new machinery. The company has also purchased a large tract of coal and iron property which will be developed, and will soon commence the erection of 300 coke ovens to supply coke for the furnace. C. E. Buek is president; William Yule, vice-president and treasurer, and F. V. Berry, secretary.

A change has been made in the plans of the Republic Iron & Steel Company for the building of its new open hearth steel plant at Youngstown, Ohio. Instead of moving the 10-inch mill and No. 3 bar mill from the Brown-Bonnell to the Valley plant, as originally intended, the new steel plant will be located across the river on land recently purchased.

General Machinery.

The Automatic Molding Machine Company, Chicago, has been incorporated with a capital stock of $20,000 to manufacture a patent molding machine. The incorporators are H. O. Lange, H. H. Rogerson and A. C. Rogerson.

The Williams-Forrest Machine Company, South Bend, Ind., has been incorporated with a capital stock of $25,000. Factory room for the present has been engaged in a building formerly occupied by the Sandage Steel Skein Company, and it is expected that machinery, which has already been purchased, will be installed early in April. In addition to manufacturing and selling the Williams Clover Leaf concrete mixer, the company will design and build special and experimental machinery of all kinds. At a meeting of the directors March 3 the following were elected officers of the company: President, W. O. Williams; vice-president, Jos. C. Paxton; secretary, Harry H. Keller; treasurer, K. C. De Rhodes.

Newbury & Peper, machinists, will soon begin the erection of a new machine shop at Madison, Wis. The addition to their present plant will be two stories in hight, 44 x 66 feet. The firm secures the entire old part of the Sheldon warehouse, which will give them ample room for their business, which has been conducted for nine years.

The Automatic Refrigerating Company, New York, which represents the merged interests of the Automatic Refrigerating Company, Cleveland, Ohio; Singer Automatic Ice Machine Company, Bridgeport, Conn., and the Marshall Ice & Refrigerating Machine Company, Boston, Mass., is about to move its offices, shops and refrigerating show plant to Hartford, Conn., where quarters have been secured with greatly increased manufacturing facilities. The company's new address will be 630 Capitol avenue, Hartford, Conn.

The Morgan Construction Company, Worcester, Mass., builder of continuous mills, gas producers and heating furnaces, is to build an erecting shop, to be one story and about 50 x 80 feet.

Power Plant Equipment.

The Leviathan belt, manufactured by the Main Belting Company, 1219-1241 Carpenter street, Philadelphia, has established a demand which is steadily increasing as its peculiar resisting powers become more widely known. Its insensibility to conditions which prohibit the employment of leather belts and which speedily injure rubber belts has caused it to increase the variety of purposes to which it can be applied. It has successfully run exposed to heat, cold, wet, grease, grime, flying sparks, &c. It is manufactured either for heavy service and rough usage for driving purposes or for conveying coarse materials such as ores, coal, rock, clay, sand, &c. The manufacturer states that its make-up combines the tensile strength of steel with ideal pliancy, thus securing a combination which imparts to it such a powerful grip on the pulley that the full quota of power is frequently secured with a belt running with a slackness that it is claimed other types of belt are unable to approach. The demand for Leviathan belting has so greatly increased that the Main Belting Company has been obliged to add to its already large and well equipped manufacturing facilities. The company has recently completed on the latest and most approved lines an addition to its plant which is expected to keep pace measurably with the demand for this belting. A booklet has been issued which gives intending belt buyers much valuable information.

The Holyoke Belting Company, Holyoke, Mass., has recently received orders for several large leather belts, including a 48-inch heavy double submarine for a saw mill in South Carolina; 40-inch 3-ply for a large power plant in Pennsylvania; 28-inch 3-ply, and 42-inch, 32-inch and 24-inch heavy double belts for power plants in western and southern New York.

The Canton Pump Company, Canton, Ohio, manufacturer of the Canton duplex and single cylinder steam pumps, recently furnished five steam pumps of large capacity for use in the charitable institutions on Blackwell's Island, New York.

The La Crosse Boiler Company, La Crosse, Wis., has been organized by a consolidation of the N. Funk Boiler Works Company and W. J. Salberg & Son, boiler manufacturers of La Crosse, with a capital of $40,000. For the present two plants will be operated, but it is the ultimate intention to erect one large plant in which not only the machinery from these two plants will be installed but a large number of new tools will also be purchased. The company manufactures tubular and marine boilers and does a general line of tank work. The officers are: L. J. Salberg, president; W. J. Salberg, vice-president; W. F. Funk, secretary; M. Funk, treasurer.

The National Electric Company, Milwaukee, Wis., reports having closed a contract with the Edison Illuminating Company, Detroit, Mich., for four 500-kw. motor generator sets, to be used for railway service.

The City of Pawtucket, R. I., is contemplating installing a 15,000,000-gallon pump for its water service.

The Strouse-Adler Company, New Haven, Conn., is to install a 100 horse-power steam plant to generate electricity to light its plant.

The Stecker Gasoline Engine Company, Chicago, has incorporated to manufacture the Stecker gasoline engine. The company is capitalized at $30,000 and is located at 92 La Salle street. Alexander J. Stecker, L. B. Springer and James Turner are the incorporators.

The City of Waterbury, Conn., is contemplating the establishment of a pumping station for use with its high service water system.

The Mayor of Marlow, Ind. Ter., will receive bids until March 21 for the construction of water and light system, including boilers, pumps, engines, generators, &c.

The Town of Franklin, Va., will receive bids until March 27 for the construction of water works and sewerage system, which will include a steam pump and other accessories.

The plant of the Rumsey Gas Engine Company, which was burnt at Ripley, N. Y., is to be rebuilt at Friendship, N. Y. A new company has been incorporated under the name of the Rumsey Mfg. Company, with a capital stock of $20,000, and a new building will be put up at Friendship and machinery installed as soon as possible. The directors of the new company will be C. B. Rumsey, B. F. Drake, H. A. Corbin, J. F. Costigan, Frank R. Utter, A. L. Elliott and C. M. Estell.

The Oswego Boiler & Engine Company, Oswego, N. Y., organized some time ago, is now operating the large and well equipped plant of the Oswego Boiler Works, which it recently acquired. The business is under the management of L. C. Bentley, recently mechanical engineer of the Lehigh Valley Railroad, and the boiler shop will be in charge of C. W. Crozier, who has had a long experience in boiler and plate work. The company will manufacture boilers, tanks, stand pipes, &c.

On account of its increase in business the Southern Engine & Boiler Works, Jackson, Tenn., has issued another $100,000 of stock, thus increasing its capital stock to $300,000. This new issue of stock, together with the undivided profits, gives the company a capital of approximately $400,000.

The Board of Public Service of Cleveland, Ohio, will receive bids until March 21 for furnishing one 250 horse-power engine and a 200-kw. generator.

C. E. Morse, formerly with the Knowlton Packing Company, Boston, has opened works for the manufacture of metallic packing for engines, pumps, &c., at 109 Haverhill street in that city.

The Andrews Light & Water Company has been incorporated at Andrews, Ind., with $10,000 capital stock. The directors are Henry B. Thornton, W. E. Nichols and John H. Moore.

The Michigan City Ice & Cold Storage Company, Michigan City, Ind., has ordered plans for the improvement of its plant, estimated to cost $100,000.

Among the extensions of its plant by the Indianapolis Water Company, Indianapolis, Ind., this year will be two 2,500,000-gallon pumps. F. A. W. Davis is president.

The Home Light & Water Company, Bloomfield, Ind., will install new generators and dynamos. Robert P. Dugger is general manager.

The Morocco Electric Light Company, Morocco, Ind., will reconstruct its plant and install a new generator and Corliss engine. W. P. Harpole is president.

The Westinghouse Machine Company, East Pittsburgh, Pa., has received a contract from the Wabash Railroad for three

500 horse-power engines to be installed in the new power house to be built adjoining its new passenger and freight station in Pittsburgh.

The Standard Boiler & Plate Company, Niles, Ohio, has been incorporated with a capital of $100,000. W. A. Thomas is president; C. T. Swaney, vice-president; D. J. Finey, secretary and treasurer, and E. A. Siebert, manager. It is understood the company will build a new plant at Niles, Ohio, for turning out heavy plate work. It has bought the plant of the Marietta Boiler Works at Marietta, Ohio, and will remove it to Niles, where its new plant is to be located.

Since the beginning of this year the Westinghouse Electric & Mfg. Company, Pittsburgh, has received some very heavy orders for electric equipment for machine shop practice. The company is now building motors for the equipment of the shops of the Griffin Wheel Company, Kensington, Ill.; the St. Louis & San Francisco Railroad at Springfield, Mo., and the International Harvester Company at Chicago.

Foundries.

The Adrian Steel Casting Company, Adrian, Mich., will shortly increase the capacity of its plant by the installation of four furnaces and its force of men will be doubled. The company has abandoned the use of coke for fuel and substituted oil. A specialty is made of automobile work.

The Trojan Brake Shoe & Foundry Company has been incorporated, with a capital stock of $50,000, at Troy, N. Y., to manufacture brake shoes, &c. The incorporators are J. H. Caldwell, T. H. Campion, C. F. Burns, T. S. Fagan and R. Kellogg of Utica, N. Y.

The Jellico Machine & Foundry Company, Jellico, Tenn., has begun work on its plant. It will manufacture a line of first-class stoves and do general foundry and machine work.

The Whitney Iron Works, New Orleans, La., has increased its capital stock from $200,000 to $300,000.

The American Steel Foundries is preparing plans for increasing the capacity of its original plant at Granite City, Ill., where the company is now building an extensive addition to its recently acquired Commonwealth plant.

The Gibby Foundry Company, East Boston, Mass., is to extend its molding shop by a new building, 50 x 176 feet.

The H. B. Smith Company, Westfield, Mass., manufacturer of heating apparatus, is to build an addition to its foundry, extending the present building 150 feet. A new cupola will be installed.

The new foundry of the Brooks works of the American Locomotive Company, Dunkirk, N. Y., will be ready for operation April 1. Six large electric cranes, four cupolas, elevators, cars, platforms and tracks are now being installed. The old foundry is to be utilized for the manufacture of steam shovels, for which a good deal of special machinery has been ordered. Several hundred workmen will be employed in this new department.

J. C. Barnes, Leavenworth, Kan., has purchased the business of the Enos Foundry Company, Waterloo, Iowa, manufacturer of fine gray iron castings. The foundry is being run to full capacity and plans are under way to increase its size. Mr. Barnes was superintendent of the Great Western Stove Company, Leavenworth, and was at one time connected with J. Van Wormer & Co., Albany, N. Y.

Bridges and Buildings.

H. C. Koch & Son, architects, Milwaukee, are ready for bids on the structural steel for a 14-story $1,000,000 hotel to be erected at New Orleans.

Fires.

The coaling station of the Chicago & Alton Railroad, Chicago, Ill., was burned last week. The loss is placed at $50,000.

The Neenah Paper Company's mill at Neenah, Wis., was partly destroyed by fire last week. The loss is placed at over $100,000.

The plant of the Kentucky Electric Company, Owensboro, Ky., was burned March 8, the loss being about $25,000.

The shops of the Alberta Railway & Irrigation Company at Lethbridge, Ont., were burned March 8. The loss is placed at about $20,000.

The piano and organ factory of H. Lehr & Co., Easton, Pa., was destroyed by fire March 12. The loss is placed at $75,000.

Hardware.

The Empire Knife Company, Winsted, Conn., manufacturer of pocket cutlery, has increased its capital stock from $40,000 to $80,000. The proceeds of the sale of the new shares will be devoted to the expansion of the company's business.

The Badger Steel Roofing & Corrugating Company, La Crosse, Wis., has found it necessary on account of increasing business to move to a new location at Seventh and La Crosse streets. The building at this point is two stories, 50 x 150 feet. The company will retain the two warehouses which it has been occupying and which are located one block distant on the railroad track. A specialty will be made of cornices, skylights, steel ceilings, finials, &c., and the company will continue as heretofore the manufacture of eaves trough, conductor pipe, trimmings and steel tanks.

The Fuller Mfg. Company, Moline, Ill., and the Western Implement Mfg. Company, Kansas City, Mo., after negotiations which have been pending for several weeks have reached an agreement whereby the two concerns will be merged and the plant of the Fuller Company removed to Kansas City. It is expected that all of the machinery will have been transferred and the manufacture of Fuller-Lee grain drills begun in the Kansas City plant within two months. The consolidated companies will have a capital stock of $100,000, all of which is fully subscribed.

A new organization, known as the American Mining Tool Company, of Ottumwa, Iowa, has been formed with a capitalization of $100,000, absorbing the American Mining Tool Company of What Cheer, Iowa. The new company has purchased the Janney Mfg. Company's plant at Ottumwa, which was built and modernly equipped about four years ago at a cost of $84,000. The plant is equipped with electric power. The company will continue to manufacture coal miners' tools, including coal drills and all other tools of this class. It will also take up a line of stamped ware, making miners' lamps, pails, canteens and similar supplies.

The plant of the Pague Mfg. Company, manufacturer of pieced tin and galvanized ware, cans and novelties, Kansas City, Mo., was partially destroyed by fire recently, causing a loss of $8000 to $10,000. The work of rebuilding is being pushed forward rapidly and orders are being taken without interruption.

Miscellaneous.

The Bullock Electric Mfg. Company, Cincinnati, Ohio, has just placed an order with the Electric Cable Company, 42 Broadway, New York, for the new insulating compound, Voltax, for impregnating field and armature coils.

The Holly Construction Company, Holly, Col., has opened a permanent New York office at 5 Nassau street. The company is at present building a 1200-ton beet sugar refinery at Swink, Col.

The Columbian Iron & Wire Works, Washington, D. C., is building a two-story workshop and foundry, 50 x 200 feet, which will be used as an addition to its present shop, which is inadequate to take care of its business. The company makes ornamental iron and wire work.

The recent fire in the building occupied by the Wrought Iron Range Company, St. Louis, Mo., did very little damage, and the building will be rebuilt in about 30 days. The company was inconvenienced but little by the fire.

Exaggerated reports have appeared in the daily papers concerning the erection of a carbuilding plant at Warren, Pa. The facts are that Sidney Seichrist and a few others of that town have purchased a strip of land 120 x 600 feet, and have commenced the erection of a plant for repairing and rebuilding cars. The first building to be erected will be 40 x 80 feet, and the whole enterprise will represent an expenditure of about $12,000. New steel cars will be built, but the only work done at the new plant will be the assembling of the parts, which will be secured from outside plants. Later it is expected the shop will be enlarged and the business may develop into a large industry.

The Central Electric Company, Greensboro, N. C., has been incorporated with a capital stock of $25,000 to carry on a wholesale electrical supply and machinery business. Those interested include W. C. Waddell, C. W. Petty and C. E. Leak.

The Worcester Color Company, Worcester, Mass., sustained a fire loss of $15,000 to its plant March 10. Harry W. Goddard, president and treasurer of the Spencer Wire Company, Worcester, is head of the Worcester Color Company. He states that no decision can be made as to the rebuilding of the plant until the insurance has been adjusted. The company manufactures dye stuffs from by-products of the wire mills.

The Harbison-Walker Refractories Company, Pittsburgh, Pa., has recently secured some large contracts for its refractory materials and fire brick. Among these are the Bethlehem Steel Company, South Bethlehem, Pa., new open hearth furnace, two blast furnaces; New Jersey Zinc Company, Palmerton, N. J., new blast furnace and four stoves; Milliken Bros., Staten Island, N. Y., five new basic open hearth furnaces, soaking beds, heating furnaces, gas producers, &c.; New York State Steel Company, Buffalo, N. Y., two 200-ton Talbot furnaces, soaking beds, gas producers, &c.; Colonial Iron Company, Riddlesburg, Pa., blast furnace lining; Dunbar Furnace Company, Dunbar, Pa., furnace lining; Central Iron & Steel Company, Harrisburg, Pa., blast furnace lining; Colorado Fuel & Iron Company, Pueblo, Col., blast furnace lining; Republic Iron & Steel Company, brick for 100 beehive ovens. The following companies have placed large orders for fire brick: H. C. Frick Coke Company, Washington Coal & Coke Company, Copper Queen Mining Company, Dawson, N. M.; Hostetter, Connellsville Coal & Coke Company and National Cement Company.

The Powell Mfg. Company, Utica, N. Y., recently organized for the manufacture of timers and mufflers, has its new shop fairly well equipped, but it is probable that some other tools will be purchased a little later on. The following are the officers and directors: W. S. Foster, president; H. S. Powell, vice-president; George A. Bowman, secretary; Jno. J. Radell, treasurer, and W. B. Foster.

The Iron and Metal Trades

Statistically, the pig iron industry remains in very good shape, with production slightly curtailed and stocks apparently still declining. The returns from the coke blast furnaces to *The Iron Age* show that the capacity of the furnaces in blast on March 1 was 479,737 gross tons per week, as compared with 482,156 tons per week on February 1. During February the furnaces of the steel companies did not produce as heavily as expected, making only 1,216,760 tons, while the merchant furnaces produced 677,272 tons. The production in February, a short month, was 1,894,032 tons, as compared with 2,068,893 tons in January, the record month.

Partial reports indicate that stocks are still falling off slightly in the Northern districts. Full returns from the merchant furnaces of Alabama, Virginia, Tennessee and Georgia show that stocks on hand, which amounted to 144,852 tons on January 1, 1906, fell to 110,066 tons on February 1 and to 102,351 tons on March 1. The Southern companies have been making every effort to ship iron prior to March 1, when the advance in freights went into effect.

The uncertainties as to fuel supply are having a considerable effect upon the pig iron markets. A strike in the anthracite regions does not usually seriously curtail the output of pig iron. The quantity of anthracite used is not in itself very large, and there is always the alternative of smelting with coke instead. Our records show that during the five months' anthracite coal strike of 1902 the production of pig iron in the Schuylkill, Lehigh, Lebanon and Susquehanna valleys and in New Jersey averaged 135,475 tons per month. During the three months preceding the strike and the two months following it the average monthly product was 157,311 tons, thus indicating a monthly curtailment of roughly 20,000 tons, which would not very seriously disturb the industry.

Current business in Pig Iron is limited to early requirements. There is considerable inquiry of this character and there is a steady flow of moderate sized orders which are encouraged by the talk of possible strikes among the coal miners. But the really interesting phase of the market is that which deals with the third quarter or the second half, and it is for such deliveries that makers show some anxiety, while melters appear indifferent. Thus far few of the furnaces have shown any disposition to force matters, and, in the few instances in which this has been done, values have suffered.

The Rail trade continues the banner branch of the industry, and some very good inquiries have again appeared. These include 30,000 tons from one transcontinental line, 15,000 from another road and 30,000 tons from the Guayaquil & Quito road. Among the orders placed during the last few days are 10,000 tons for the Perè Marquette and 9000 tons for the Missouri, Kansas & Texas, carrying the orders for that line to about 32,000 tons. The requirements for trolley lines continue exceedingly heavy. During the past week one venture of this character has bought 6000 tons.

Requirements for Structural Material are still very heavy and promise to come out in further quantities. During the first half of the month the leading interest booked 18,000 tons and other mills are taking large quantities. The contract for 7000 tons for the Astor Apartment House in this city has been placed with J. B. & J. M. Cornell. St. Louis reports that there is under negotiation the material for three large office buildings which will call for 12,000 tons.

It is impossible yet to answer the all absorbing question whether the activity in the orders and shipments in the lighter lines during the past winter has been in anticipation of the ordinary spring demand. This applies particularly to Wire products, Sheets and Tin Plate.

Bars have weakened further East and West, and there are reports that 1.50c., Pittsburgh, has been done for good Iron Bars. In Merchant Steel the mills are finding their order books running low and some uneasiness prevails.

The Merchant Pipe trade is not in a satisfactory condition, prices being low. Some of the Eastern mills are reported to be carrying a considerable stock of Finished Pipe.

The spring is opening auspiciously in the Cast Iron Pipe industry. Some pretty good contracts are being placed, and some large ones are in sight.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Mar.14, 1906.	Mar.7, 1906.	Feb.14, 1906.	Mar.15, 1905.
PIG IRON, Per Gross Ton:				
Foundry No. 2 Standard, Philadelphia	*$18.25*	$18.50	$18.50	$17.50
Foundry No. 2 Southern, Cincinnati	*16.50*	17.00	16.75	16.25
Foundry No. 2, Local, Chicago	19.00	19.00	19.00	17.50
Bessemer, Pittsburgh	18.35	18.35	18.35	16.35
Gray Forge, Pittsburgh	*17.00*	16.85	17.35	16.00
Lake Superior Charcoal, Chicago	*19.75*	19.75	20.00	18.50
BILLETS, RAILS, &c., Per Gross Ton:				
Bessemer Billets, Pittsburgh	*26.50*	26.50	27.00	24.00
Forging Billets, Pittsburgh	32.00	32.00	32.00	26.00
Open Hearth Billets, Phila	**29.50**	29.00	29.00	28.00
Wire Rods, Pittsburgh	34.00	34.00	34.00	33.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL, Per Gross Ton:				
O. Steel Rails, Chicago	*13.50*	15.00	15.00	14.50
O. Steel Rails, Philadelphia	*16.25*	16.25	17.25	18.00
O. Iron Rails, Chicago	*20.50*	21.50	21.50	20.00
O. Iron Rails, Philadelphia	*20.50*	20.50	23.00	24.50
O. Car Wheels, Chicago	19.00	19.00	19.00	15.75
O. Car Wheels, Philadelphia	*18.00*	18.00	18.75	17.00
Heavy Steel Scrap, Pittsburgh	*14.75*	14.75	16.00	16.00
Heavy Steel Scrap, Chicago	*13.50*	13.00	13.00	14.50
FINISHED IRON AND STEEL, Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia	1.73½	1.73½	1.73½	1.75
Common Iron Bars, Chicago	*1.70*	1.75	1.75	1.60
Common Iron Bars, Pittsburgh	*1.70*	1.80	1.85	1.65
Steel Bars, Tidewater, New York	1.64½	1.64½	1.64½	1.64½
Steel Bars, Pittsburgh	1.50	1.50	1.50	1.50
Tank Plates, Tidewater, New York	1.74½	1.74½	1.74½	1.74½
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.60
Beams, Tidewater, New York	1.84½	1.84½	1.84½	1.74½
Beams, Pittsburgh	1.70	1.70	1.70	1.60
Angles, Tidewater, New York	1.84½	1.84½	1.84½	1.74½
Angles, Pittsburgh	1.70	1.70	1.70	1.60
Skelp, Grooved Steel, Pittsburgh	1.57½	1.57½	1.57½	1.65
Skelp, Sheared Steel, Pittsburgh	1.60	1.60	1.60	1.70
SHEETS, NAILS AND WIRE, Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, No. 27, Pittsburgh	2.30	2.30	2.30	2.20
Wire Nails, Pittsburgh	1.85	1.85	1.85	1.80
Cut Nails, Pittsburgh	1.80	1.80	1.80	1.80
Barb Wire, Galv., Pittsburgh	2.30	2.30	2.30	2.25
METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Copper, New York	**18.62½**	18.37½	17.87½	15.25
Spelter, St. Louis	**6.15**	6.05	5.95	6.05
Lead, New York	*5.35*	5.35	5.40	4.45
Lead, St. Louis	*5.27½*	5.27½	5.35	4.37½
Tin, New York	*36.50*	35.80	36.60	29.37½
Antimony, Hallett, New York	16.00	15.25	16.00	7.87½
Nickel, New York	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	$3.69	$3.69	$3.69	$3.74

Chicago.

FISHER BUILDING, March 14, 1906.—(*By Telegraph.*)

The large number of orders placed with local Iron merchants during the week for material for immediate shipment indicates that stocks in consumers' hands are very low and point to an early resumption of buying to cover future requirements. One large radiator interest purchased 2500 tons of Southern Pig Iron for March and April delivery, and inquiries for lots ranging from 300 to 500 tons are more numerous than at any time in the past three months. Stocks at Southern furnaces, on the other hand, are unusually low, and while concessions have been made here and there the market does not readily respond to the efforts of consumers to bring about lower values. In finished lines transactions of the week are without feature. The consumption of Bars, Structural Material, Sheets and Wire products continues unprecedented. The spread between Iron and Steel Bars has been reduced to $1 a ton, and as the Scrap market continues to decline a parity of values is looked for in the near future. No orders for future requirements are being placed by consumers of Bars and Merchant Shapes whose contracts expire on April 1, and it is probable that these interests will make purchases to cover immediate wants only until something more definite can be ascertained with reference to prices that will prevail on this material for delivery after July 1. At St. Louis the specifications for the Steel for three large office buildings are under consideration, aggregating 12,000 tons, and the building that is going on in that place is greater than at any time in its history. Locally very little is under consideration, although the adoption of an ordinance requiring the elevation of additional tracks in this city at a cost of nearly $6,000,000 will call for a large tonnage of Plates and Shapes. The Sheet market is in better condition than it has

been at any time in the past three years. Prevailing quotations are being well maintained and the independent mills as well as those of the American Sheet & Tin Plate Company are carrying a large tonnage on their books to cover future requirements. In the wire trade specifications still exceed shipments and deliveries are being further deferred. New orders, however, are light and it is doubtful if jobbers will make new contracts until present material is delivered. Fairly prompt deliveries can be made on wide Sheared Plates and Eastern mills are promising early deliveries on Universal mill products. Western and Southern railroads are buying cars more freely and inquiries now out cover 10,000 box and gondola cars, while the Peré Marquette Railroad has just placed an order with the Pullman Company for 2000 box cars. The city of Duluth has placed an order with the United States Cast Iron Pipe & Foundry Company for 2500 tons of small Water Pipe and gas companies continue to buy freely. The action taken by the Illinois Coal operators at a meeting held in this city points to the closing down of all the mines in this State April 1, regardless of the action of the miners. These operators have taken the stand independently of those in other fields, and it is believed that their action will precipitate a strike in this State. In the meantime Western mills and railroads are laying in large stocks in anticipation of a long shutdown, and it is not believed that consumers will suffer greatly unless the mines are inoperative until after July 1.

Pig Iron.—The demand for Iron for prompt delivery has improved materially, and from careful investigation stocks in the hands of consumers generally are low. Outside of the purchase of 2500 tons made by the American Radiator Company for delivery in March and April no large inquiries have been under consideration during the past week. But the demand for prompt delivery has improved, and requests for immediate shipments of small lots indicate that consumers generally are without large stocks. The recent advance in freight rates on Southern Iron has resulted in cleaning up stock, and reports from Southern furnaces indicate that only a small tonnage still remains in the yards. It is generally believed that consumers will soon come into the market to cover their requirements for the next three months, as the lull in the demand since December has not resulted in any appreciable reduction in prices, except on Southern grades, Northern brands having gone off only from 25c. to 50c. a ton. Western Steel foundries continue exceedingly short of Iron, and are drawing on furnaces in the valleys as well as at Columbus, Ohio, for their requirements. One large Southern interest is out of the market entirely until May 1, and still another is firmly maintaining a basis of $14.50. Others are selling at $14, while Iron from one furnace averaging 2 per cent. in phosphorus is offered in this market as low as $13.75. The general disposition among Southern furnace interests on Iron that should have been shipped before March 1 is to absorb the 25c. advance in freight. Prevailing quotations on Pig Iron, f.o.b. Chicago, are as follows:

Lake Superior Charcoal	$19.75 to $20.00
Northern Coke Foundry, No. 1	19.50 to 19.75
Northern Coke Foundry, No. 2	19.00 to 19.25
Northern Coke Foundry, No. 3	18.50 to 18.75
Northern Scotch, No. 1	20.00 to 20.25
Ohio Strong Softeners, No. 1	20.05 to 20.30
Ohio Strong Softeners, No. 2	19.55 to 19.80
Southern Coke, No. 1	18.40
Southern Coke, No. 2	17.90
Southern Coke, No. 3	17.40
Southern Coke, No. 4	16.90
Southern Coke, No. 1 Soft	18.40
Southern Coke, No. 2 Soft	17.90
Southern Gray Forge and Mottled	16.40
Malleable Bessemer	19.00 to 19.25
Standard Bessemer	19.55
Jackson Co. and Kentucky Silvery, 6 %	21.30
Jackson Co. and Kentucky Silvery, 8 %	23.30
Jackson Co. and Kentucky Silvery, 10%	25.30

Metals.—Inquiries for Copper have developed in large number, and a considerable increase in sales is being made. Casting Copper is ¼c. higher. An advance of 25c. per 100 lbs. has been made on Sheet Zinc, while Desilverized Lead is 0.05c. lower. We quote: Casting Copper, 18¼c. to 18⅜c.; Lake, 18½c. to 19c.; Pig Tin, car lots, 37½c. to 38c.; small lots, 38½c. to 39½c.; Spelter, prompt delivery, 6⅜c. to 6⅝c. for car lots; Lead, Desilverized, 5.45c. to 5.70c. for 50-ton lots; Corroding, 6c. to 6.25c. for 50-ton lots; on car lots, 2¼c. per 100 lbs. higher; Sheet Zinc is $7.75 list, f.o.b. Laselle in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 16c.; Heavy Copper, 15½c.; Copper Bottoms, 14¾c.; Copper Clips, 15¼c.; Red Brass, 14¾c.; Red Brass Borings, 12¾c.; Yellow Brass, Heavy, 11¾c.; Yellow Brass Borings, 9¾c.; Light Brass, 8½c.; Lead Pipe, 4¾c.; Tea Lead, 4½c.; Zinc, 4½c.; Pewter, No. 1, 24c.; Tin Foil, 29c.; Block Tin Pipe, 27½c.

(By Mail.)

Billets and Rods.—Practically all of the Western mills are suffering from a shortage of both Rolling and Forging Billets, and as the Illinois Steel Company and the Inland Steel Company are out of the market, at least through the remainder of the first half of the year, shipments to meet immediate requirements have to be made from the East. Axle and Forging Billets in large lots are offered, f.o.b. Chicago, at $32 to $33. The American Steel & Wire Company is also out of the market on Rods, and on the few small lots that are being sold from time to time for prompt delivery prices range from $35 to $36, Chicago.

Rails and Track Supplies.—The demand for Traction Rails is heavy and widely distributed, but is limited almost entirely to small lots and is not running into a large tonnage. The Illinois Steel Company has its output of Light Rails sold for the next three months, and Western mines and lumber camps are placing contracts for prompt delivery with the Colorado Fuel & Iron Company in the West and the Cambria Steel Company and the Lackawanna Steel Company in the East. Spikes for prompt delivery are selling on the basis of 2.25c. to 2.30c., while on forward shipments 2.10c. can be done. We make the following quotations: Angle Bars, accompanying Rail orders, 1906 delivery, 1.50c.; carload lots, 1.75c.; Spikes, 2.10c.; Track Bolts, 2.65c. to 2.75c., base, Square Nuts. The store prices on Track Supplies range from 15c. to 20c. above mill prices. Light Rails, 30 to 45 lb. sections, $27 to $28; 25-lb., $28 to $29; 20-lb., $29 to $30; 16-lb., $30 to $31; 12-lb., $31 to $32, and lighter sections down to 8-lb., $38 to $40, f.o.b. mill. Standard Sections are unchanged at $28, f.o.b. mill, full freight to destination.

Plates.—The tonnage on wide Plates is comparatively light and all the mills are in a position to make fairly prompt deliveries. Considerable new Steel car business is under negotiation, notwithstanding the fact that car manufacturers have their output practically sold through the remainder of the year. The Chicago, Lake Shore & Eastern Railroad, one of the underlying corporations of the Illinois Steel Company, has specifications out for 500 Steel cars, and the Peré Marquette has just placed an order with the Pullman Company for 2000 box cars. The Chicago, Burlington & Quincy and the Chicago Great Western are taking bids on 1000 box cars each. Quotations are firmly maintained, as follows: Tank quality, ¼-inch and heavier, wider than 6¼ and up to 100 inches wide, inclusive, car lots, Chicago, 1.76½c.; 3-16-inch, 1.86½c.; Nos. 7 and 8 gauge, 1.91½c.; No. 9, 2.01½c.; Flange quality, in widths up to 100 inches, 1.86½c., base, for ¼-inch and heavier, with the same advances for lighter weights; Sketch Plates, Tank quality, 1.86½c.; Flange quality, 1.96½c. Store prices on Plates are as follows: Tank Plate, ¼-inch and heavier, up to 72 inches wide, 2c. to 2.10c.; from 72 to 96 inches wide, 2.10c. to 2.20c.; 3-16 inch up to 60 inches wide, 2.10c. to 2.20c.; 72 inches wide, 2.35c. to 2.45c.; No. 8, up to 60 inches wide, 2.15c. to 2.25c.; Flange and Head quality, 25c. extra.

Structural Material.—A large amount of building is under way in the city of St. Louis, and three large contracts aggregating 12,000 tons are now under consideration. Following the Fair that city has experienced an unprecedented building boom, and three large office buildings are already well under way. The elevation of the tracks of the Chicago & Western Indiana, the Belt Railway of Chicago, the Wabash and the Rock Island is being urged, and if the proposed ordinance is adopted a large tonnage of steel will be required for numerous street crossings. Quotations on material for prompt delivery on assorted sizes are now at a maximum of 2.25c. and as low as 2.10c. can be done. Mill quotations are as follows: Beams and Channels, 3 to 15 inches, inclusive, 1.86½c.; Angles, 3 to 6 inches, ¼ inch and heavier, 1.86½c.; Angles, larger than 6 inches on one or both legs, 1.96½c.; Beams, larger than 15 inches, 1.96½c.; Zees, 3 inches and over, 1.86½c.; Tees, 3 inches and over, 1.91½c., in addition to the usual extras for cutting to extra lengths, punching, coping, bending or other shop work.

Sheets.—The Sheet trade is in better condition at present than it has been at any time in the past three years. The basis now prevailing is being upheld by not only the American Sheet & Tin Plate Company but independent Tin Plate manufacturers as well, indicating that all are carrying a large tonnage on their books for forward delivery and light specifications are coming forward freely. Jobbers and large distributers experience considerable difficulty in securing material from the mills, and on Galvanized Sheets shipments cannot be made in less than 60 days, while on certain gauges of Black Sheets 90 days are required. Quotations are firmly maintained as follows: Blue Annealed, Nos. 9 and 10, 1.86½c. to 1.91½c.; Nos. 16 and 17, 2.06½c. to 2.11½c.; Box Annealed, Nos. 18 to 20, 2.26½c. to 2.31½c.; No. 27, 2.46½c. to 2.51½c.; No. 28, 2.56½c. to 2.61½c.; Galvanized Sheets, Nos. 10 to 14, 2.61½c.; Nos. 17 to 21, 2.86½c.; Nos. 22 to 24, 3.01½c.; Nos. 25 and 26, 3.21½c.; No. 27, 3.41½c.; No. 28, 3.61½c.; No. 30, 4.11½c. Sheets from store: Blue Annealed, Nos. 10 and 11, 2.10c. to 2.20c.; Nos. 12 and 13, 2.15c. to 2.25c.; Nos. 14 and 15, 2.20c. to 2.30c.; No. 16, 2.30c. to 2.40c.; Box Annealed, Nos. 18 to 20, 2.50c. to 2.60c.; Nos. 22 to 24, 2.60c. to 2.70c.; No. 26, 2.65c. to 2.75c.; No. 27, 2.70c. to 2.80c.; No. 28, 2.80c. to 2.90c.; No. 30, 3.25c. to 3.35c. Galvanized from store: Nos. 10 to 20, 3c. to 3.10c.; Nos. 22 to 24, 3.15c. to 3.25c.; No. 26, 3.35c. to 3.45c.; No. 27, 3.55c. to 3.65c.; No. 28, 3.75c. to 3.85c.; No. 30, 4.85c. to 5.05c.

Bars.—Iron Bars are now practically on a basis of only $1 a ton above Steel Bars, but even at this price little new business is coming forward. Specifications on existing contracts are heavy, however, and the mills are not reaching consumers to close for future requirements. As yet no sales have been reported on an equal basis with Steel Bars, although the declining tendency of the Scrap market would indicate that lower prices will soon prevail. The avalanche of specifications that goes to the mills from week to week for Steel Bars indicates the tremendous consumption and in many cases consumers are anticipating their requirements. On account of the lower mill prices prevailing on Iron Bars the large Western jobbers have reduced prices from 2.25c. to 2.10c. We revise quotations as follows: Iron Bars, 1.70c. to 1.71½c.; Steel Bars, 1.66½c., both half extras; Hoops, 2.06½c., extras as per Hoop card; Bands, 1.66½c., as per Steel card; Soft Steel Angles and Shapes, 1.66½c., half extras. Store prices are as follows: Bar Iron, 2.10c.; Steel Bars, 1.85c., and as high as 2c. is asked on certain scarce sizes; Steel Bands, 1.85c. to 1.90c., half extras; Soft Steel Hoops, 2.30c. to 2.40c., full extras.

Merchant Pipe.—Specifications on existing contracts are coming forward more freely than for some time, large distributers placing orders for stocks to meet the spring demand. Quotations, however, are unchanged and are on the basis of 81 per cent. off the list, Pittsburgh, notwithstanding the official discounts on car lots, Chicago, which are as follows: Black Steel Pipe, 78.35 per cent. on the base sizes ¾ to 6 inches, and Galvanized, 68.35 per cent. Iron Pipe is quoted from 1½ to 2 points higher. From store in small lots Chicago jobbers are quoting 76½ to 77 per cent. on Black Steel Pipe, ¾ to 6 inches.

Boiler Tubes.—New business continues comparatively light, but specifications are coming forward in good volume from the large boiler manufacturers and quotations are being firmly maintained. Official discounts, base sizes, in car lots, are as follows: Steel Tubes, 62.35; Iron, 51.35; Seamless, 50.35; 2½-inch and smaller and lengths over 18 feet, and 2½-inch and lengths over 22 feet, 10 per cent. extra. Store prices are unchanged, as follows:

	Steel.	Iron.	Seamless.
1 to 1½ inches	40	35	42½
1¾ to 2¼ inches	50	35	35
2½ inches	52½	35	30
2¾ to 5 inches	60	47½	42½
6 inches and larger	50	35	..

Merchant Steel.—The tonnage on the books of the manufacturers is being rapidly reduced and in only a few instances will any of the existing contracts with large implement manufacturers expire on April 1 with tonnage still to their credit. Thus far none of these consumers has asked for prices, and the indications are that they will not close for future deliveries on the present basis and will purchase to cover immediate requirements only during the next two or three months. The general belief among implement manufacturers is that some concessions should be made on their large contracts and they are satisfied to wait until June or July before taking any definite action. Quotations are unchanged, as follows: Planished or Smooth Finished Tire Steel, 1.70c.; Iron Finish up to 1½ x ½ inch, 1.65c., and Iron Finish, 1½ x ½ inch and larger, 1.50c., base, Pittsburgh, and Channels for solid rubber tire are quoted as follows: ¾, ⅞ and 1 inch, 2c., and 1⅛ inch and larger, 1.90c., Pittsburgh; Smooth Finished Machinery Steel, 1.91½c.; Flat Sleigh Shoe, 1.71½c.; Concave and Convex Sleigh Shoe, 1.86½c.; Cutter Shoe, 2.40c.; Toe Calk Steel, 2.21½c.; Railway Spring, 1.86½c.; Crucible Tool Steel, 6½c. to 8c.; special grades of Tool Steel, 13c. and up; Shafting, 50 per cent. discount on car lots and 45 per cent. in less than car lots, in base territory.

Cast Iron Pipe.—The contract for 2500 tons of Pipe, ranging in size from 4 to 12 inches, awarded to the United States Cast Iron Pipe Company by the city of Duluth last week, is the largest municipal letting reported. Bids on the 10,000 tons for the city of New Orleans will close May 15. Pipe manufacturers report a lack of Heavy Pipe orders on their books, and, on the other hand, the tonnage of smaller sizes already closed is greater than is customary at this season of the year. Quotations remain unchanged, notwithstanding the weakening of the Southern Iron market, as follows: Water Pipe, 4-inch, $31; 6, 8, 10 and 12 inch, $30; over 12-inch, $29, with $1 extra for Gas Pipe. Large municipal contracts are usually placed at somewhat lower basis.

Coke.—The market is somewhat firmer than it has been during the past few months, which is no doubt due to the anxiety of consumers to lay in stocks in anticipation of the Coal strike. This strike would probably curtail the Coke production of some of the operators along the main line of the Pennsylvania Railroad in Pennsylvania who would find it more profitable to ship their Coal, but otherwise production will hardly be curtailed. Strictly high grade Connellsville Coke continues to be sold in this market on the basis of $5.40 to $5.65, while high sulphur grades are offered at concessions of $1 a ton. Not many contracts for by-product Coke are being closed and new orders that are being taken are for small lots and for prompt delivery. Quotations are firmly maintained at $5.80, Chicago.

Old Material.—The market continues to decline, and lower prices on practically all grades of material are noted this week. Consumers are still interested in bargains only, and as a result a lower basis is made with almost every sale reported. The railroad lists, on the other hand, are light, and this to some extent is having a tendency to check the market and to prevent a still more rapid decline. The range of prices paid by large consumers to producers and dealers, car lots, f.o.b. Chicago, is as follows:

Old Iron Rails	$20.50 to $21.00
Old Steel Rails, 4 feet and over	15.50 to 16.00
Old Steel Rails, less than 4 feet	13.50 to 14.00
Heavy Relaying Rails, subject to inspection	27.00 to 27.50
Old Car Wheels	19.00 to 19.50
Heavy Melting Steel Scrap	12.50 to 13.00
Frogs, Switches and Guards	13.50 to 14.00
Mixed Steel	12.00 to 12.50

The following quotations are per net ton:

Iron Fish Plates	$15.50 to $16.00
Iron Car Axles	22.50 to 23.00
Steel Car Axles	18.50 to 19.00
No. 1 Railroad Wrought	15.00 to 15.50
No. 2 Railroad Wrought	14.00 to 14.50
Locomotive Tires, smooth	14.00 to 14.50
Railway Springs	13.50 to 14.00
No. 1 Dealers' Forge	11.00 to 11.50
Wrought Pipes and Flues	10.00 to 10.50
Mixed Busheling	10.00 to 10.50
Iron Axle Turnings	11.00 to 11.50
Soft Steel Axle Turnings	11.00 to 11.50
Machine Shop Turnings	11.00 to 11.50
Cast Borings	9.00 to 9.50
Mixed Borings, &c	9.00 to 9.50
No. 1 Mill	9.00 to 9.50
No. 2 Mill	7.50 to 8.00
No. 1 Boilers, cut to Sheets and Rings	10.50 to 11.00
No. 1 Cast Scrap	12.50 to 13.00
Stove Plate and Light Cast Scrap	10.50 to 11.00
Railroad Malleable	12.00 to 12.50
Agricultural Malleable	11.50 to 12.00

Philadelphia.

REAL ESTATE TRUST BUILDING, March 13, 1906.

The indisposition to renew contracts which has been so conspicuous for several weeks past is in no way abated. One reason is no doubt the uncertainty in regard to the fuel situation. Neither buyers nor sellers of Pig Iron appear to be anxious to take the initiative. Consequently there is a dead level of monotony. Consumers have nearly all the Iron bought that they expect to require during the second quarter, so that they can afford to wait, while for the same cause sellers see no reason for changing their attitude. Deliveries seem to be a little easier, so that premiums are no longer obtainable for short deliveries. The entire future is therefore more or less clouded with uncertainty, although the change when it does come is not likely to be of any great importance. In a comparative sense it would take very little buying to make a strong market, but as such buying is not in evidence the turn for the moment appears to be in buyers' favor. Bids at the recent inside figures are promptly taken up and on first-class business a little better could be done, but the immediate situation is not weak enough to cause any distinct break in prices. It might not require much pressure to knock off 25c. to 50c. per ton, but such pressure is not likely to be applied in the immediate future, for the reason that there is little or no stock either at furnaces or in consumers' yards. The main feature, however, is in regard to prices during the second half of the year. Buyers are not inclined to commit themselves until they are pretty well convinced that they can be held steady at about the present figures, and as that is somewhat open to doubt new engagements are allowed to hang fire pending further developments. These may not begin to mature for some time, as there is no scarcity of immediate business and as a matter of fact both production and consumption show no decrease whatever. It is a curious situation and is almost without precedent. Consumption is enormous and prospects seem to be as good as they have ever been, yet there is little or no interest shown in regard to operations during the latter portion of the year. The presumption is that with such a vast capacity for production it is felt that even a very slight falling off in consumption would weaken prices, and until there is some substantial evidence that the demand will be large enough to prevent this new engagements are likely to be limited both as regards tonnage and deliveries.

Pig Iron.—There is a good deal of inquiry for Iron, mostly for April and May shipments, but the tonnage asked for is not large. Consumers are evidently disposed to strengthen their position during the next two or three months, but they will probably be able to do so at something around to-day's quotations. Furnaces are well sold ahead, but deliveries are better than they have been for many weeks, and it looks as though there would be no difficulty in sparing moderate quantities to meet the current demand during the period named. Prices are easier all around, and while there has not been enough done to thoroughly test the market it is safe to say that almost anything that buyers want could be done at 15c. to 25c. below the figures recently ruling. There is a possibility that still better could be done if fears of a coal strike were allayed, but until that is set-

tled a feverish and unsettled market is unavoidable. The usual quotation for No. 2 X Foundry is $18.50, but $18.25 to $18.35 is frequently accepted, so that $18.25 to $18.50 is about the range for that class of Iron. Gray Forge is dull, but such business as comes on the market is usually done at from $16.50 to $16.75, although the inside figure takes most of the business. Special brands, however, are firmly held at the usual premium. Steel making Irons are easier. No business of any great importance has been done, but offerings of Basic from the South indicate that prices will have to be revised before much business can be done. While there is a singular lack of inquiry, compared with the pressure during January and February, furnaces are so well sold up that they are not the least disturbed, knowing that when contracts run out they will have to be renewed. Renewals may not be for as large tonnages, and they may be at revised prices, but business will not cease simply because contracts are completed. Low Phosphorus is easier, and inquiries are less urgent owing to the supplies of foreign material, which are on the spot or in course of shipment. The orders taken are in carload lots, and from that to 100 to 200 tons each at prices ranging from $25.50 to $26, delivered, at nearby points. Prices are a little irregular, but as a rule the range would be about as follows for Philadelphia and nearby deliveries:

No. 1 X Foundry	$19.00 to $19.25
No. 2 X Foundry	18.25 to 18.50
No. 2 Plain	17.50 to 18.00
Standard Gray Forge	16.50 to 17.00
Basic, nominal at	17.75 to 18.00
Low Phosphorus	25.00 to 25.50
Bessemer	19.75 to 20.25
Malleable Iron	19.00 to 19.25

Steel Alloys.—The market is a little easier, owing to larger receipts from abroad. The feeling is very unsettled, however, and the quotations given may be regarded as an estimate rather than as representative sales. Prices are purely nominal at about the figures named below, the inside figure being for late deliveries:

Silico Spiegel, 10 and 18 per cent	$43.00 to $50.00
Ferrosilicon, 50 per cent	90.00 to 92.00
Spiegeleisen, 20 per cent	38.00 to 45.00
Ferromanganese, 80 per cent	85.00 to 140.00

Steel.—The demand is very good and prices are extremely firm. Large lots have been taken at $29, but makers are so well sold up that $29.50 is now considered an inside quotation. There appears to be some shortage in the West, as many inquiries have been coming in from that source during the past few days and some sales made.

Muck Bars.—Nothing is doing in this line and prices are nominally unchanged at $28 to $29, f.o.b. sellers' mills.

Plates.—Mills are well supplied with orders, but new business has not been in large volume during the past week or two. Prices unchanged—viz.:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel	1.73½	1.78½
Flange or Boiler Steel	1.83½	1.88½
Marine, A. B. M. A. and Commercial Fire Box Steel	1.93½	1.98½
Marine	2.13½	2.18½
Locomotive Fire Box Steel	2.23½	2.28½

The above are base prices for ¼-inch and heavier. The following extras apply:

	Extra per 100 pounds.
3-16-inch thick	$0.10
Nos. 7 and 8, B. W. G.	.15
No. 9, B. W. G.	.25
Plates over 100 to 110 inches	.05
Plates over 110 to 115 inches	.10
Plates over 115 to 120 inches	.15
Plates over 120 to 125 inches	.25
Plates over 125 to 130 inches	.50
Plates over 130 inches	1.00

Structural Material.—While there is an abundance of work mills seem to be gaining on their orders and deliveries can be arranged with much less delay than during the past several months. Prospects are entirely satisfactory, however, and prices are firm as last quoted: Beams, Channels and Angles, 1.83½c. to 2c., delivered.

Bars.—The Bar Iron trade is extremely dull and prices are not as steady as could be desired. There are a number of mills that make a low quality of Iron which they offer at less than market rates, which is made a basis for claiming first-class material at the same prices. Such claims are not conceded, but they unsettle the market and temporarily hold up a good deal of new business. Specifications are satisfactory, however, and in the meanwhile mills are running moderately full. Steel Bars are quoted at 1.63½c., subject to some delay in delivery; but at a half-tenth to a tenth more there is not much difficulty in getting prompt shipments. Best Refined Iron is quoted at 1.73½c. to 1.78½c. Common Iron can be done at less than 1.70c. Small Angles are 2c. to 2.15c.

Sheets.—There is a good demand for Sheets, and mills are doing better than for some time, although prices are unchanged as follows: Nos. 18 to 20, 2.40c.; Nos. 22 to 24, 2.50c.; Nos. 25 and 26, 2.60c.; No. 27, 2.70c., and No. 28, 2.80c.

Old Material.—There is hardly any change to notice in this department. The supply is not excessive, but there is so little demand that sales are difficult to make unless at bid prices. There is an impression that prices are scraping bottom, but as yet buyers are not disposed to take large lots. Bids and offers for deliveries in buyers' yards are about as follows:

Scrap Steel Rails and Crops	$16.25 to $16.50
No. 1 Steel Scrap (yard)	15.50 to 16.00
Low Phosphorus Scrap	21.00 to 23.00
Old Steel Axles	19.00 to 20.00
Old Iron Axles	24.00 to 25.00
Old Iron Rails	20.50 to 21.50
Old Car Wheels	18.00 to 18.75
Choice Scrap, R. R. No. 1 Wrought	19.00 to 19.50
No. 1 Yard Scrap	17.00 to 18.00
Long and Short	15.50 to 16.00
Machinery Scrap	15.50 to 16.00
Wrought Iron Pipe	14.00 to 15.00
No. 1 Forge Fire Scrap	15.50 to 16.00
No. 2 Light Ordinary	10.00 to 11.00
Wrought Turnings	13.50 to 13.75
Axle Turnings, Choice Heavy	14.00 to 14.50
Cast Borings	9.50 to 10.00
Stove Plates	12.00 to 12.50
Grate Bars	11.50 to 12.00

Pittsburgh.

PARK BUILDING, March 14, 1906 (*By Telegraph.*)

Pig Iron.—We note more inquiry for Pig Iron, particularly from Chicago and other Western districts, but the ideas of the consumers and the furnacemen as to prices are rather far apart, and as yet no tonnage has been placed. There is certainly more inquiry, and it is confidently believed that inside of a month and possibly before March has expired there will be a buying movement. The Steel Corporation has bought 5000 tons of Basic for March and April delivery at $17, Valley furnace. This is the only sale of Pig Iron of any consequence since the purchase by the Steel Corporation of 7000 tons of Bessemer made last week for March delivery. We quote Bessemer Iron at $17.50, Valley furnace, for ordinary lots, and note a sale of 500 tons at this price. We quote Basic at $17, Valley furnace. There is some inquiry for Foundry Iron, but the market is rather weak, some of the furnaces in the Cleveland district quoting relatively low prices. We quote Northern No. 2 Foundry at $17 to $17.25, Valley furnace, and note a sale of 500 tons at the first named price. There is not much inquiry for Forge Iron, and we quote Northern brands at $16.15 to $16.25, Valley furnace, equal to $17 and $17.10, Pittsburgh.

Steel.—The market remains quiet and there is very little inquiry. The mills are making better deliveries on Billets and Sheet and Tin Bars, but these are not yet quite as satisfactory as consumers would like. We quote Bessemer Billets $26.50 to $27 and Open Hearth $27 to $28, Pittsburgh. We quote Sheet and Tin Bars in random lengths $27, delivered in the Pittsburgh district, with an advance of 50c. for Cut Bars.

(*By Mail.*)

Attention is riveted this week to the convention of United Mine Workers in Indianapolis, which will probably definitely settle the question as to whether there will be a Coal strike. Some large consumers of Coal still believe the chances favor a strike and are storing Coal as fast as possible. The action of the independent Soft Coal operators in refusing to grant the miners any advance is of importance and favors the chances of a strike. Strong pressure is being brought to bear on the Pittsburgh Coal Company to settle the strike, and it is reliably stated that this company is in favor of giving the men an advance in wages equal to about 6 per cent. General conditions in the Iron trade are quiet, the tonnage of new business in all lines excepting Rails and Structural Steel showing a large falling off. The mills are just as busy as they could possibly be, but are running largely on the heavy contracts placed last fall and up to January, specifications on which are coming forward in a fairly satisfactory way. In Pig Iron there are no large inquiries in the market, but the fact that consumers are specifying freely on Iron bought, and in some cases are anticipating shipments would seem to indicate that a buying movement in Pig Iron should start in before long. Some in the trade believe that in the latter part of March there will be more buying of Pig Iron, as it is claimed that the stocks of some large consumers are getting very low. Bessemer Iron remains quite firm at $17.50, Valley furnace, and Basic Iron $17, at furnace. The Cambria Steel Company has recently been a purchaser of Basic Iron to some extent. There is a fair inquiry for Foundry Iron, Northern No. 2 being held at $17.25 to $17.50, Valley furnace. There is little or no inquiry for Forge Iron, Northern brands being held at $16 to $16.25, at maker's furnace. Indications are that the Steel mills are catching up to some extent on deliveries on Billets, Sheet and Tin Bars, which are better than for some time, but are not yet as satisfactory as consumers of Steel would like to have them. Tonnage in

Finished Material is only of a fair volume, showing a distinct falling off in nearly all lines. Prices for Scrap and Coke are firmer, on the latter being due to the uncertainty as to whether there will be a Coal strike. It is understood that strictly Connellsville Furnace Coke for spot delivery has sold as high as $2.40 a ton at oven.

Ferromanganese.—We continue to note quite an active demand for prompt shipment and note two sales of about 25 tons each made this week at $145 to $147.50, Pittsburgh. We quote prompt Fero at $135 to $145 and for April and May delivery $110 to $115, delivered, Pittsburgh. For the last half of the year a sale of 100 tons is reported at $85, Pittsburgh. The announcement that the local producer of Ferro would not be a seller in the open market this year has had the effect of firming up prices to some extent.

Muck Bar.—There is absolutely no inquiry and in the absence of sales we quote local grades of Muck Bar, made from all Pig Iron, at nominally $29, Pittsburgh.

Steel Rails.—A good deal of tonnage continues to be placed and in the past week mills have taken 40,000 tons or more. A number of railroads that placed their contracts some months ago have again come in the market and bought additional quantities. The Rail mills are now booked up to October or later, while the Tennessee Company is sold up into next year. We quote Standard Sections at $28 at mill. Demand for Light Rails is fairly active and the prices are quite firm, as follows: 8-lb., $36; 10-lb., $32; 12-lb., $30; 16-lb., $29; 20-lb., $28.50; 25 to 45 lbs., $27.50 to $28, maker's mill.

Rods.—There is a fair demand, with some difficulty in getting deliveries, as the leading makers are not selling in the open market. We continue to quote Bessemer and Open Hearth Rods at $34 and Chain Rods $35, Pittsburgh.

Skelp.—A moderate amount of new business is being placed, but the mills are running mostly on contracts. Prices are firm and we quote: Grooved Steel Skelp, 1.57½c. to 1.60c.; Sheared Steel Skelp, 1.60c. to 1.65c.; Grooved Iron Skelp, 1.65c. to 1.70c.; Sheared Iron Skelp, 1.75c. to 1.80c., Pittsburgh, these prices being for ordinary widths and gauges.

Structural Material.—Several heavy contracts have been closed in the past week, details of which are not yet ready to be announced. The amount of tonnage in sight is enormous and insures full work for the Structural concerns for some months to come. Deliveries of Materials from the mills are better than for some time. Prices continue very firm and we quote: Beams and Channels, up to 15-inch, 1.70c.; over 15-inch, 1.80c.; Angles, 3 x 2 x ¼ inch thick up to 6 x 6 inches, 1.75c.; 8 x 8 and 7 x 3½ inches, 1.80c.; Zees, 3-inch and larger, 1.70c.; Tees, 3-inch and larger, 1.75c. Under the Steel Bar card Angles, Channels and Tees under 3-inch are 1.60c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Plates.—The new business being placed in Plates is not nearly so heavy as it was some time ago and the mills are catching up on deliveries to some extent. It is believed the general demand for Plates will show improvement before long. We quote: Tank Plates, ¼ inch thick, 6¼ up to 100 inches in width, 1.60c., base, at mills, Pittsburgh. Extras over the above prices are as follows:

	Extra per 100 pounds.
Gauges lighter than ¼-inch to and including 3-16-inch Plates on thin edge	$0.10
Gauges Nos. 7 and 8	.15
Gauge No. 9	.25
Plates over 100 to 110 inches	.05
Plates over 110 to 115 inches	.10
Plates over 115 to 120 inches	.15
Plates over 120 to 125 inches	.25
Plates over 125 to 130 inches	.50
Plates over 130 inches	1.00
All sketches (excepting straight taper Plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)	.10
Complete Circles	.20
Boiler and Flange Steel Plates	.10
"A. B. M. A." and ordinary Fire Box Steel Plates	.50
Still Bottom Steel	.30
Marine Steel	.40

Shell Grade of Steel is abandoned.

TERMS.—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within ten days from date thereof, discount of ½ of 1 per cent. is allowable. Pacific Coast base, 1.60c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 inches wide down to 6 inches of Tank, Ship or Bridge quality.

Sheets.—There is no noticeable change in the condition of the Sheet trade, the new demand being light, but buyers are specifying heavily on contracts and shipments from the mills are very large. Prices are fairly well maintained and we quote: Black Sheets, Box Annealed, one pass through cold rolls, Nos. 10 to 12 gauge, 2c.; Nos. 13 and 14, 2.05c.; Nos. 15 and 16, 2.10c.; Nos. 17 to 21, 2.15c.; Nos. 22 to 24, 2.20c.; Nos. 25 and 26, 2.25c.; No. 27, 2.30c.; No. 28, 2.40c.; No. 29, 2.55c., and No. 30, 2.65c. It is probable that on desirable specifications these prices could be shaded about $1 a ton. Galvanized Sheets: Nos. 10 and 11, 2.35c.; Nos. 12 to 14, 2.45c.; Nos. 15 and 16, 2.55c.; Nos. 17 to 21, 2.70c.; Nos. 22 to 24, 2.85c.; Nos. 25 and 26, 3.05c.; No. 27, 3.25c.; No. 28, 3.45c.; No. 29, 3.70c., and No. 30, 3.95c. We quote No. 28 Gauge Painted Roofing Sheets at $1.65 per square and Galvanized Roofing Sheets, No. 28 gauge, at $3 per square for 2½-inch corrugations. Jobbers charge the usual advances over these prices for small lots.

Bars.—New demand for both Iron and Steel Bars is light and the mills are running nearly altogether on specifications on contracts placed some time ago. There has been a sharp decline in prices of Iron Bars, due to dull demand and the lower prices for Iron Scrap and Muck Bar. The large makers are now quoting Iron Bars at 1.65c. to 1.70c., Youngstown, equal to 1.70c. to 1.75c., Pittsburgh. We quote Steel Bars at 1.50c., base, half extras, for carloads and larger lots.

Hoops and Bands.—Practically no new orders are being placed, the mills running nearly altogether on contracts placed some time ago when prices were lower. We quote Steel Hoops at 1.90c., and Bands for all purposes at 1.50c., base, half extras as per Standard Steel card. These prices are for carload lots, f.o.b. Pittsburgh, plus full tariff rail rate to point of delivery, an advance of $2 a ton being charged for less than carloads.

Tin Plate.—While the new demand for Tin Plate is light, specifications on contracts are being received by the mills in large volume and shipments are heavy. In fact, the mills are somewhat behind in deliveries and are not in position to take orders for Tin Plate for prompt shipment. There is still a scarcity of Tin Bars, but the situation in this respect gives promise of being relieved before very long. We quote Tin Plate at $3.50 per base box, f.o.b. Pittsburgh, for 14 x 20 100-lb. Cokes, terms 30 days, less 2 per cent. off for cash in 10 days, on which price a rebate of 5c. a box is usually allowed for carloads and larger lots.

Merchant Steel.—The mills are rapidly catching up on deliveries and unless new business soon increases the mills are liable to be short of work before a great while. Prices are fairly strong and we quote: Planished or Smooth Finished Tire Steel, 1.70c.; Iron Finish up to 1½ x ½ inch, 1.65c., and Iron Finish, 1½ x ½ inch and larger, 1.50c., base, Pittsburgh. and Channels for solid rubber tire are quoted as follows: ¾, ⅞ and 1 inch, 2c., and 1⅛-inch and larger, 1.90c.; Toe Calk Steel, 2c. to 2.05c.; Railway Spring Steel, 1.65c. to 1.70c.; Cutter Shoes, 2.20c. to 2.25c.; Flat Sleigh Shoe, 1.50c. to 1.55c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades and 12c. and upward for special grades. We quote Cold Rolled Shafting at 50 per cent. discount in carloads and 45 per cent. in less than carloads, delivered in base territory.

Railroad Spikes.—A moderate amount of new business is being placed and the mills are well filled up for several months ahead. We quote $2 to $2.05 per 100 lbs., f.o.b. Pittsburgh.

Spelter.—We note a good deal more inquiry for Spelter, prices being firmer and slightly higher. We quote prime grades of Western Spelter at 6c. to 6.05c., St. Louis, equal to 6.12½c. and 6.17½c., Pittsburgh.

Merchant Pipe.—We note a continued seasonable demand for Merchant sizes of Pipe, the tonnage entered by the leading mills so far this year being considerably ahead of last year. Several large contracts for Line Pipe are being figured on, but have not progressed far enough to be made public. There is no change in prices, the extreme discount on Steel Pipe being 81 per cent. off to the large trade. Official discounts which are shaded one point to the large trade are as follows:

Merchant Pipe.

	Jobbers, carloads.			
	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
	%	%	%	%
⅛ and ¼ inch	72	56	69	53
⅜ inch	74	60	71	57
½ inch	76	64	73	61
¾ to 6 inches	80	70	77½	67½
7 to 12 inches	75	60	72½	57
Extra strong, plain ends:				
⅛ to ¾ inch	65	53	62	50
½ to 4 inches	72	60	69	57
4½ to 8 inches	68	56	65	53
Double extra strong, plain ends:				
½ to 8 inches	61	50	58	47

Discounts to consumers in small lots are one point higher than above.

Boiler Tubes.—Some heavy orders for Steel Boiler Tubes from Boiler manufacturers are being placed and shipments by the mills are quite heavy. We also note a moderate demand for Iron Tubes. Discounts are as follows:

Boiler Tubes.

	Iron.	Steel.
1 to 1½ inches	41	46
1¾ to 2¼ inches	41	58
2¼ inches	46	60
2½ to 5 inches	53	66
6 to 13 inches	41	58

Iron and Steel Scrap.—While there is a little more inquiry for Scrap the general condition of the market is not

satisfactory, prices being weak and liable to go lower. Dealers quote about as follows: Heavy Melting Scrap, $14.75 to $15; Cast Iron Borings, $9 to $9.25; Bundled Sheet Scrap, $13.50 to $13.75; No. 1 Wrought Scrap is very weak and there is no demand, dealers quoting about $17 for it; Old Steel Rails, short pieces, are $14.75 to $15; long pieces for rerolling, $16 to $16.50; Machinery Cast Scrap, $15.50 to $15.75; Old Car Wheels, $18 to $18.25; Steel Turnings find no market in the Pittsburgh district, but bring about $12, Youngstown.

Coke.—This week it looks more as though there might be a Coal strike and prices on both Furnace and Foundry Coke are decidedly firmer. Sales of strictly Connellsville Furnace Coke have been made for prompt shipment at prices ranging from $2.25 to $2.40 per ton at oven. Strictly Connellsville 72-hour Foundry Coke for prompt delivery is held at $2.75 to $3 a ton at oven. The output of Coke continues very heavy, the Upper and Lower Connellsville region having turned out last week about 382,000 tons.

Birmingham.

BIRMINGHAM, ALA., March 12, 1906.

Pig Iron.—This week has been a duplicate of last, so far as inquiries and orders are concerned. Shipments have not fallen off, and while it was thought that on account of the large quantity of Iron moved prior to March 1 this would be a dull month and some stocks might accumulate, such is not the case to date. Melters are specifying freely, in many cases anticipating their orders, and shipments are keeping up with production. Furnaces are quoting $14 to $14.50 for No. 2 Foundry, while off grades are being offered with but little regard for this basis. Alabama's production of Iron has not increased to any marked extent thus far over last year, a number of furnaces being still out which were expected to start this month. No. 2 City Furnace of the Sloss-Sheffield Steel & Iron Company, blown out last December for repairs and relining, will not go in blast before May 1 on account of being unable to secure necessary firebrick for lining. The new stack being built by the Alabama Consolidated Coal & Iron Company at Gadsden, which it was thought would be making Iron before this, will not be completed under 60 days. This company's Ironton furnace also went out of blast last week for relining, which will require about 90 days. The No. 5 furnace of the Tennessee Coal, Iron & Railroad Company at Ensley, which is being rebuilt, enlarged and modernized, and which was reported would be ready to start about April 1, will not be ready for the torch before August. The Tennessee Company's No. 3 stack at Bessemer, which is being relined, is not expected to go in blast under 60 days and will probably be out longer.

Old Material.—The market has been very dull, sales being confined almost exclusively to Cast Scrap. Dealers report good stocks on hand and quote approximately the following prices per gross ton, f.o.b. cars here:

Old Iron Rails	$18.00 to $18.50
Old Iron Axles	18.00 to 19.00
Old Steel Axles	16.00 to 17.00
Old Car Wheels	16.00 to 16.50
No. 1 Railroad Wrought	16.00 to 16.50
No. 2 Railroad Wrought	15.00 to 15.50
No. 1 Country Wrought	14.00 to 14.50
No. 2 Country Wrought	12.00 to 12.50
Wrought Pipe and Flues	12.00 to 12.50
Railroad Malleable	12.00 to 12.50
Mixed Steel	10.00 to 10.50
No. 1 Machinery Cast	11.50 to 12.00
Stove Plates and Light Cast	9.00 to 9.50

Cast Iron Pipe.—Though the Iron market is weakening to some extent Pipe is holding its own, with an upward tendency, the shops in this district having their entire output of certain sizes booked for months ahead. Foundries here are bidding on the 10,000-ton contract to be let by New Orleans April 1, and on account of the favorable freight rates and low cost of production here it will probably be awarded to one of them. Prices on Water Pipe are understood to be very strong at about the following figures per ton, f.o.b. cars here:

4 to 6 inch	$27.00
8 to 10 inch	26.00
12 to 20 inch	25.00
24 to 48 inch	24.00

Gas Pipe, $1 per ton extra.

The directors of the Sloss-Sheffield Steel & Iron Company will hold a meeting in New York March 14, at which time President Maben will submit his report for last year. It is understood the showing made is a very fine one and that the company now has sufficient money in its surplus fund with which to erect a Steel plant. Plans for this have been drawn and will be inspected by the board, and a location and time of erection will probably be decided upon.

The Quinn Furnace Company, Gadsden, making Charcoal Iron, has fired its kilns and now expects to begin operating its furnace as soon as a supply of Charcoal can be secured. This grade of Iron is in good demand now, only two of the six furnaces in Alabama being in blast, due to scarcity of suitable wood for making Charcoal.

Cleveland.

CLEVELAND, OHIO, March 13, 1906.

Iron Ore.—Sentiment is setting in for lower Ore freights on the lakes for the coming season. Negotiations are under way for chartering the first wild boats. It is considered not unlikely that the opening rates will be 70c. from the head of the lakes for Ore, with other ports based on this figure. This is a 5c. reduction from the contract rates made the latter part of last year. Shippers have also some more Ore to place on contract and may insist on the lower rates on that also. A governing influence in the market is the belief that the amount of Ore to be brought down is to show a contraction from early expectations, owing to developments in the Iron market. In addition the expected surplus of tonnage in the lake trade is a factor. The movement of Ore from lake docks to the furnaces is still comparatively heavy and from present consumption it is believed stocks on dock will be reduced by the opening of navigation below the figures shown last year. We quote $4.25, base, for Old Range Bessemer, on docks at Lake Erie ports.

Pig Iron.—Inquiries are good and some of them are working into good business, but it is apparent that the larger buyers of Foundry Iron are holding for lower prices. The market seems to be gradually drifting to the level for which consumers have been waiting. The ruling price in Cleveland in the past week has been about $17 in the Valley for No. 2. Most of the buying is for spot shipment. Southern Iron is also a little easier in this territory and some producers have been quoting prices of $13.50 to $14, Birmingham, for No. 2, in view of the 25c. addition to the freight. Buyers are taking the stand that top prices are now being paid and that buying for spot shipment will permit them to tide over the period of price uncertainty with a prospect of geeting in on a lower level. The Bessemer and Basic trades are easier, under the same conditions governing in the Foundry trade. The Coke market is steady, but not especially buoyant.

Finished Iron and Steel.—Some of the easy feeling noted during the past two weeks has disappeared from the local situation. One instance is indicative of the trend of events. An Eastern mill sold Structural Steel in Cleveland to be delivered in ten days. Deliveries were not forthcoming, and the order was scaled down one half without better results. The consumer eventually went to the jobbers to get the greater part of his material, the mill shipping only one-fourth of the amount specified. It is apparent that no new contracts of importance are coming in, but at the same time current orders are up to the capacity of the mills. Two Eastern mills have taken lots of 200 to 500 tons for quick shipment at premiums. Two new vessel orders have been placed with lake shipyards, and it is understood that several more boats are under option. It is stated that all the Steel for these new ships is provided for under an elastic contract between the American Shipbuilding Company and the Steel Corporation. Plates are comparatively easy, but in that respect the situation has not changed much. Mills are in position to make deliveries in three to four weeks. The short supply of orders among the Eastern mills is mostly responsible for this situation. Billets are firmer than ever. One of the mills which has had Billets for sale announced its withdrawal from the market in the past week. It had been quoting Forging Billets at $35, at the mill. Another mill came into the market in the past few days and offered some Forging Billets at $35, delivered, in Cleveland. The order has not yet been closed. The larger concerns report that on account of the need of Steel to take care of new finishing capacity they have no Billets for sale. Bessemer Billets are scarce, and the market holds at about $28 to $29, Pittsburgh. Bar Steel is easier as to the smaller sizes of rounds, but on any assortment of sizes deliveries could not be made inside of five to seven weeks. On smaller round Bars deliveries can be made in ten days. We quote 1.50c., Pittsburgh, for both Bessemer and Open Hearth. Bar Iron market is weaker. Some of those who have contracted are disposed to cancel. The mills are quoting 1.70c., Youngstown. Sheets continue active. Mill shipments are promised not under eight weeks, while the stock supply has been subject to a heavy drain. Prices are still based on 2.15c. for No. 10 Black Sheets; 2.70c. for No. 28 One Pass Cold Rolled, and 3.70c. for No. 28 Galvanized.

Old Material.—Many of the buyers have been holding off on buying Scrap during the past week, but it is apparent that many buyers have large needs which will have to be covered soon. The accumulation of stocks and the slackness of buying has weakened the market, with prices yielding in some quarters. The following represent dealers' prices to the trade, f.o.b. Cleveland, gross tons: Old Steel Rails, $16 to $17; Old Iron Rails, $22.50 to $23; Iron Car Axles, $16 to $17; Heavy Melting Steel, $15.50 to $16.50. Net tons: Cast Borings, $8.50 to $9; No. 1 Busheling, $14 to $15; No. 1 Railroad Wrought, $16.50 to $17.50; Iron Car Axles (nominal), $22 to $23; No. 1 Cast, $15; Stove Plate, $11; Iron and Steel Turnings and Drillings, $11 to $12.

Cincinnati.

FIFTH AND MAIN STS., March 14, 1906.—(*By Telegraph.*)

Pig Iron.—The market continues to show no signs of activity. Possibly there may be a few more small inquiries floating around, but whether these are *bona fide* or are simply feelers present developments have not yet revealed. That there is evidently a tendency toward weakness in the general market conditions is apparent from this fact, if from no other, and that is the readiness with which consumers needing Iron listen to the propositions of the selling agencies; then, after sifting prices to the bottom, state that they will but nothing at present. The demand for spot Iron continues and it is very apparent that most melters are in need of all the Iron that was bought some months since. It seems in the general opinion of the well informed that a large percentage of the furnaces have sold within at least 25 per cent. of their producing capacity up to July 1, which if true will leave a small surplus if buyers come forward within the next month as anticipated. Prices of both Northern and Southern Iron have declined somewhat since our report of last week, and seem to be only fairly well established at these figures. Southern Forge and Foundry are said to be in good supply and selling below schedule. One of the large radiator companies is reported to have bought 2000 tons, mostly Southern, on an analysis basis for various deliveries. Other transactions are 1200 tons of Malleable, 1000 tons of Basic and 750 tons of Southern Car Wheel. Freight rates from Hanging Rock district to Cincinnati are $1.15 and from Birmingham $3. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1	$17.00 to $17.50
Southern Coke, No. 2	16.50 to 17.00
Southern Coke, No. 3	16.00 to 16.50
Southern Coke, No. 4	15.25 to 15.75
Southern Coke, No. 1 Soft	17.00 to 17.50
Southern Coke, No. 2 Soft	16.50 to 17.00
Southern Coke, Gray Forge	14.75 to 15.25
Southern Coke, Mottled	14.50 to 15.00
Ohio Silvery, No. 1 (8 per cent. Silicon)	21.15 to 21.65
Lake Superior Coke, No. 1	18.15 to 18.65
Lake Superior Coke, No. 2	17.65 to 18.15
Lake Superior Coke, No. 3	17.15 to 17.65
Car Wheel Irons.	
Standard Southern Car Wheel	$23.50 to $24.00
Lake Superior Car Wheel	22.00 to 22.50

Coke.—The market is fairly active and prices are firm. Operators say that they are far behind in shipment, and all ovens are crowded with orders. This is due to the regular demand at this time, but possibly in some instances to the agitation regarding labor troubles among the miners. We quote the best grades of Foundry Coke from Connellsville and Virginia regions from $2.90 to $3.25, f.o.b. ovens.

Finished Iron and Steel.—Reports indicate a heavy tonnage placed last week in Structural Steel and Plates. The condition of the mills is unchanged, and they are crowded with orders. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.75c., with half extras; the same, in smaller lots, 2c., with full extras; Steel Bars, in carload lots, 1.63c., with half extras; the same, in small lots, 1.85c., with full extras; Base Angles, 1.83c., in carload lots; Beams and Channels, in carload lots, 1.83c.; Plates, ¼-inch and heavier, 1.73c., in carload lots; in smaller lots, 1.90c.; Sheets, 16-gauge, in carload lots, 2.15c.; in smaller lots, 2.70c.; 14-gauge, in carload lots, 2.05c.; in smaller lots, 2.60c.; Steel Tire, 1 x ¼ inch or heavier, 1.83c., in carload lots.

Old Material.—The market is quiet and demand only fair. Prices so far as obtainable are unchanged. We quote dealers' prices, f.o.b. Cincinnati, as follows: No. 1 Railroad Wrought Scrap, $15 to $15.50 per net ton; Cast Borings, $8.50 to $9 per net ton; No. 1 Cast Scrap, $12 to $13 per net ton; Iron Rails, $22 to $22.50 per gross ton; Steel Rails, rolling mill lengths, $15 to $16 per gross ton; Relaying Rails, 56 lbs. and upward, $28 to $29 per gross ton; Iron Axles, $24 to $24.50 per net ton; Car Wheels, $18.50 to $19.50 per gross ton; Low Phosphorus Scrap, $18 to $19 per gross ton.

German Iron Trade.

BERLIN, March 1, 1906.

The German Iron trade and the German stock markets as well are just at this moment chiefly concerned with the condition and prospects in the international Iron markets. The cable reports coming from the United States for about two weeks have made a deep impression here. The reports showing a slowing up in the demand for Iron in the American market are regarded as highly significant. The decline in Scotch Iron warrant prices, too, has added visibly to the effect of this American news.

Prices of Industrial Stocks Decline.

The news just referred to has been much commented upon in Germany. What is thought of it on the stock exchanges is reflected in pretty heavy reductions in the quotations of the best German Iron shares. A list of standard shares would probably show an average reduction of at least 10 per cent. during the past fortnight. In the Iron trade, too, a certain commotion has been caused by the apparent turn of the tide in America and England, particularly as it has caused English Iron to be offered in Germany much more freely than for a long time, and at prices 1 or 2 marks below the highest quotations reached about a month ago for English grades on the Düsseldorf Exchange.

Critics of both classes, however, both stock operators and Ironmen, are by no means agreed as to whether the news from America and England means the beginning of a general decline. It is pointed out in regard to the former, for example, that American Iron booms often relax their force temporarily only to regain greater intensity later. Many judges are disposed to take this view of the present American situation. They rely upon the present great prosperity in the United States, which seems at this distance to have undergone no interruption.

Apprehension of Greater American Exports.

Nevertheless the uncertainty as to the immediate future is embarrassing, since, as our Ironmen very well know, any considerable and protracted diminution of the American home demand for Iron products would necessarily release large amounts for export. The enormous producing capacity of American furnaces and mills is a most serious factor in forecasting the future of business in the German trade, and it is this consideration that has caused people here to sell Iron shares at a moment when in our own trade almost every prospect still pleases.

The changed situation in America and England has not been wholly without effect upon the German trade. Last week the stock market was thrown into a nervous flutter by the news that a cut of 4 marks had been made in Pig Iron by the Lorraine-Luxemburg Syndicate. It turned out later that the cut applied only to sales at northern seaports, and the agents of the syndicate were instructed to make it only where necessary to meet English competition. Moreover the cut refers only to No. 3 Foundry. Beyond this the only other indication of a turn in the tide here is that the demand for Scrap has become lighter and prices for it have been shaded a little after they had recently gone up 10 marks the ton. It may be remarked in this connection that the January production of Pig Iron, the shipments of the Steel Verband and the exports of Iron products were all somewhat lower than for December, but nobody interpreted these facts as indicating any change in the general situation.

Production of Pig Iron Stationary.

The make of Pig Iron in January reached 1,018,461 metric tons, which compares with 1,029,084 tons in December and 766,209 tons in January, 1905. The reduction was in foundry and puddling grades; other increased. Iron exports in January amounted to 343,995 tons, as against 364,272 tons in December (the record month) and 219,000 tons in January, 1905. The reduction of about 20,000 tons from the December figures was due mainly to the refusal of foreign orders owing to the prodigious home demand. It is probable that still greater reductions will be reported for February and subsequent months, inasmuch as the rejection of foreign orders has assumed larger proportions since January. Two weeks ago it was announced that the Düsseldorf Pig Iron Syndicate had rejected an American order for 20,000 tons of Bessemer, and at the same time it was reported that further American inquiries for Spiegeleisen had been answered negatively. The Düsseldorf Syndicate also suspended sales in Holland, as there was a dearth of Pig Iron to meet the demand at home.

The Steel Verband's Shipments in January

amounted to 459,838 metric tons, as compared with 477,436 tons in December and 376,964 tons in January, 1905. The verband's official report says that business in half-rolled material continues very good, domestic consumers calling for goods so briskly that the mills can scarcely satisfy the demands. The foreign demand for half-rolled products has remained steady, particularly in Belgium, and larger amounts could have been sold if the home demand had not been so pressing. English business in this line of goods was reported quieter. Business in Rails and railroad materials remains satisfactory; some large engagements for street Rails were made, and a number of good foreign contracts at higher prices have partly been made and partly taken under negotiation. Better prices were secured abroad for Mine Rails, but outside competition is sharp. Employment on Structural forms is uninterruptedly good, the demand for Beams and Girders having further developed. Prices now secured in foreign markets are such as to justify a reduction of the export drawback; foreign orders are on hand in satisfactory volume and the building season of the current year is expected to enliven business still further.

The Trade Outlook.

Several weeks ago it was stated that the Düsseldorf Syndicate had sold its entire output to the end of June and that even small supplementary orders could no longer be accommodated. It is understood that a great part of the production for the second half of the year has now been contracted for. It was reported that the syndicate declared sales for the first quarter of 1907 open, but this has been disputed. If it is true it expresses a loss of confidence on the part of

producers in the continuance of the present boom, since hitherto its policy has been to restrict sales to nearby dates. The foreign orders for Pig Iron remain pretty heavy; increased amounts have been recently taken for China and Japan. Negotiations for the renewal of the Pig Iron Syndicate are in progress and it is expected that this will be accomplished before the end of the month. The Ore Syndicate in the Siegen district has also been renewed for a term of years.

Removal of Works to the Seaboard.

The movement to put blast furnaces at northern seaports, which are about the only points where English Iron can normally come into competition with the German article is making substantial progress. The success of the Krafft works near Stettin, which now turns out above 150,000 tons yearly, has given an impetus to the movement. Several months ago an organization was effected at Lübeck to establish a large furnace plant, and now it is announced that the building of another one at Nordenham on the lower Weser is assured. There are several other projects of this kind in the air. There has been much talk of an establishment at Emden, the seaport terminus of the Dortmund-Ems Canal, and Hamburg is also taking an interest in such undertakings. These seacoast furnaces will depend upon Swedish Ores and German Coal and Coke.

Modernizing of Old Plants.

What has been going on in the German Iron industry for several years, and what will continue for some time, is illustrated by a recent communication of the Union Company at Dortmund. This company has spent within a year or two above $2,000,000 in the improvement of its mines and manufacturing plants, and it is now about to issue $1,500,00 of new stock in order to carry forward its improvements still further. A new blast furnace of the latest design is to replace the remaining old one of the pattern of a quarter of a century ago, additional rolls driven by electricity are to be put in, and a plant to save the furnace gases, purify them and feed them to gas dynamos will complete the equipment. The company explains that these improvements are rendered necessary because numerous other establishments have been increasing their capital resources for making similar additions to their plants. It further explains that the enlargement of its capacity is undertaken for the purpose of securing increased allotments at the forthcoming renewal of the syndicates.

The case of this company is quite typical of the changes taking place in the great Rhenish-Westphalian Iron district and it is mentioned for that reason. American Ironmen have here the evidence that the Germans are perfecting their mechanical equipment in a way that will make them more troublesome competitors in the world's markets than they have ever been.

New York.

NEW YORK, March 14, 1906.

Pig Iron.—Both in this district and in New England there is a fair run of orders for prompt and early delivery and quite a good deal of inquiry, for which the talk of a strike in the anthracite regions is at least partially responsible. Prices show some disposition toward weakness. We quote as follows: Northern Iron, No. 1 Foundry, $18.50 to $18.75; No. 2 Foundry, $18 to $18.25; No. 2 Plain, $17.25 to $17.75. Southern Iron is quoted at $18.25 to $18.50 for No. 1 Foundry and $17.75 to $18 for No. 2 Foundry.

Steel Rails.—No let up appears in the buying of Steel Rails by steam roads and trolley roads. In addition to the bookings of the past week the Rail mills have in prospect several good orders that are now in the form of inquiries. The Pere Marquette has bought 10,000 tons; the Los Vegas & Tonopah has increased its order to 5000 tons; the M. K. & T. has placed 9000 tons additional, bringing its total up to 32,000 tons. The Fort Dodge, Des Moines & Southern has taken 6000 tons and the Green Bay, Oshkosh, Madison & Southern, a Wisconsin trolley line, 6000 tons. In addition a considerable total of trolley line orders has come from a variety of sources. Ecuador and Chile figure in the export demand. An inquiry from the Guayaquil & Quito Railroad calls for 30,000 tons.

Structural Material.—A good tonnage has been booked by the various fabricating and erecting companies in the past week. The American Bridge Company entered orders in that time for 18,000 tons, the largest item being 3000 tons for an office building in Chicago. This company has booked about 30,000 tons since March 1. Railroads west of the Mississippi have now placed most of the bridge business that was expected from that part of the country for early spring operations, but quite a considerable tonnage is yet to come from railroads east of the Mississippi. The Eastern fabricating works of the leading interest are not being pushed to the same extent as its Central Western works, as some allowance is being made for work that is expected soon to come in from Eastern sources, including very heavy orders from New York City, chiefly for downtown buildings. J. B. & J. M. Cornell Company secured the contract in the past week for the Astor Apartment House, which will require about 7000 tons of Steel. For an addition to the Midvale Steel Works at Nicetown, Philadelphia, a contract has been given for 900 tons of Structural Steel. Since the Structural mills have started to take business for delivery in the second half of the year orders have been placed for that period by a number of contracting firms. Other buyers, while specifying vigorously against present contracts, are holding off on later requirements. Cases keep coming up in which buyers are unable to get deliveries from mills and turn to the holders of stocks. These jobbers' stocks are now becoming depleted. For Shapes cut to order from stock 2.40c. to 2.50c. is charged. On deliveries from mills we quote f.o.b. New York as follows: Beams, Channels, Angles and Zees, 1.84½c.; Tees, 1.89½c.; Bulb, Angles and Deck Beams, 1.99½c. Beams, 18 to 24 inch, 0.10c. extra; Angles over 6 inches, 0.10c. extra.

Bars.—Eastern manufacturers of Bar Iron incline to the opinion that if the threatened Anthracite Coal strike takes place April 1 an advance will very shortly be made in the price of Bituminous Coal, which will cause a stiffening in Bar Iron, notwithstanding the expectation that general business in important sections of the East may be checked by the stoppage of Anthracite Coal mining. Prices of Bar Iron have recently been declining and the downward movement has gone somewhat further during the week owing to the quiet condition of trade and the disposition of some of the smaller manufacturers to press sales. General specifications for Bar Iron may be quoted at 1.69½c. to 1.74½c., tidewater, New York. Steel Bars are still held at 1.64½c. to 1.74½c., tidewater, according to quantity and delivery desired.

Plates.—New business in this vicinity is light, sales agents reporting only small lots in demand. The mills appear to be well supplied with work for the present and manufacturers speak quite confidently of the immediate future. Quotations are continued as follows, at tidewater: Sheared Tank Plates, 1.74½c. to 1.84½c.; Flange Plates, 1.84½c. to 1.94½c.; Marine Plates, 2.14½c. to 2.24½c.; Fire Box Plates, 2.24½c. to 2.60c., according to specifications.

Cast Iron Pipe.—About 2000 tons will be let by the city of Rochester, N. Y., to-day. The trade is expecting proposals to be invited soon on about 10,000 tons of 48-inch Pipe for a new line to be laid by the Department of Water Supply of this city. General business continues very good, the demand for small lots being unusually strong for the season. Foundries are very full of work on Small Pipe and are holding prices firmly. Carload lots of 6-inch are now quoted at $30.50 per net ton at tidewater.

Old Material.—A good demand is still experienced for Cast Scrap, Old Car Wheels and Malleable Scrap, but Rolling Mill Stock is very quiet. The mills are undoubtedly running quite short of stock, but are not disposed to make purchases at present. They are undoubtedly influenced by the threatened Coal miners' strike and prefer to wait to see what effect this may have on their trade. Embargoes were again extended last week, taking in several additional points in Pennsylvania. While this interferes with Scrap shipments to Steel works and some large rolling mills it will of course compel them to consume what they have on hand, which will mean an increased demand when the embargoes are lifted. Dealers report that a considerable quantity of Old Material of different kinds could be sold if they were willing to accept the prices offered, but they prefer to hold such stock as they have on hand in the expectation of an improvement in the demand as spring advances. Nominal prices per gross ton, New York or vicinity, are as follows:

Old Iron Rails	$20.00 to $20.50
Relaying Rails	25.00 to 26.00
Old Steel Rails, rerolling lengths	16.50 to 17.00
Old Steel Rails, short pieces	15.00 to 15.50
Heavy Melting Steel Scrap	15.00 to 15.50
Standard Hammered Iron Car Axles	24.00 to 25.00
Old Steel Car Axles	19.50 to 20.00
No. 1 Railroad Wrought	19.00 to 19.50
Iron Track Scrap	16.50 to 17.00
No. 1 Yard Wrought, long	16.00 to 17.00
No. 1 Yard Wrought, short	15.00 to 15.50
Wrought Pipe	13.50 to 14.00
Light Iron	10.00 to 10.50
Cast Borings	9.00 to 9.50
Wrought Turnings	12.50 to 13.00
Old Car Wheels	18.00 to 19.00
No. 1 Machinery Cast	15.50 to 16.00
Stove Plate	12.00 to 12.50
Grate Bars	10.00 to 10.50
Malleable Cast	16.50 to 17.00

The Belmont Iron Works, manufacturer of Structural Steel and Ornamental Iron, Philadelphia, announces the removal of its New York office to 1825 Park Row Building, with L. A. Dietz in charge.

The Pressed Steel Car Company, Pittsburgh, is now taking orders for steel cars for delivery next year. It is said this company is well sold up on steel cars for the next six months or longer. It has received a contract for 1000 box cars for delivery to the Boston & Maine Railroad.

Metal Market.

NEW YORK, March 14, 1906.

Pig Tin.—There has been a fair business all the week and quotations have advanced steadily. The low point was on the 8th, when Tin was sold at 36.05c. Tin was sold at 36.30c. on the 13th and to-day's price is also higher at 36.50c. The London market has likewise advanced and spot closes to-day at £166 15s., with futures at £165 7s. 6d. The arrivals so far this month are probably not equal to consumption, aggregating but 1015 tons. Shipments from the Straits during March will probably be smaller than during February. There are afloat for American ports 2865 tons. Of this tonnage 1066 tons are aboard the steamship Coulsdon from Singapore, which was scheduled to arrive on the 22d. Advices from St. Vincent, Cape Verde, state that this boat arrived there March 12 with machinery out of order; consequently this large shipment will probably be delayed for some days.

Copper.—The market has a decidedly firmer tone and the present range of prices would probably be 18.62½c. to 18.75c. for Lake, 18.37½c. to 18.50c. for Electrolytic and 18.25c. to 18.37½c. for Casting grades. Some good sized lots have been sold. The tendency which holders of the metal had some time ago to offer futures at concessions from ruling prices has disappeared. The greater part of the Copper sold has been for March, April and May shipment, particularly May, but a little has been sold for June. There is no general buying movement for future positions and it is understood that what Copper has been sold for future deliveries has been at full prices. There appears to be no scarcity of the metal. A comparative statement of the Copper exports from the United States for the first two months of the year compared with the first two months of last year shows that the total shipments this year aggregate 31,108 tons, as compared with 38,753 tons last year. Shipments to the United Kingdom, France and the Orient have fallen off, but the German consumption of Copper has shown a marked increase. This is considered significant and the total shipments to Germany and Holland for the first two months of this year were 18,393 tons, as against 12,924 tons during the corresponding period last year. The foreign markets are firmer and London quotes spot Standard Copper at £80, futures £78 5s., with Best Select ruling at £85 5s.

Pig Lead.—The market is very quiet, spot ruling at 5.35c. to 5.45c. The American Smelting & Refining Company continues to quote shipment Lead in 50-ton lots at 5.35c. In St. Louis the market is unchanged at 5.27½c. The London market is a trifle higher than a week ago at £15 17s. 6d.

Spelter.—Business appears to be very dull and for shipments from the West we quote 5.33c., New York delivery. Spot is quoted at 5.20c. bid. In St. Louis the market is steady at 6.15c. There has been a decline of $1 a ton in the price of Zinc Ores.

Antimony.—Prices are very firm and slightly higher for some grades. We quote Cookson's at 16c. to 17c.; Hallett's, 15.75c. to 16.25c.; other grades, 15.25c. to 16.25c.

Aluminum.—The demand is heavy and the principal producer is still considerably behind in the matter of deliveries. We quote No. 1 Ingots for remelting at 35c.; No. 2 Ingots, 33c.

Tin Plate.—The price is firm and there has been some new buying. We quote prices unchanged on a basis of $3.50, f.o.b. Pittsburgh, and $3.69, f.o.b. New York. In Swansea Welsh Plates are unchanged at 12s. 9d.

Old Metals.—The strength of the Ingot Copper market has again caused the holders of Old Metals to advance their quotations. There is a decidedly better demand, particularly for heavy materials. We quote dealers' selling prices as follows:

	Cents.
Copper, Heavy Cut and Crucible	17.75 to 18.00
Copper, Heavy and Wire	17.00 to 17.50
Copper, Light and Bottoms	15.50 to 16.00
Brass, Heavy	11.75 to 12.00
Brass, Light	10.00 to 10.25
Heavy Machinery Composition	15.50 to 15.75
Clean Brass Turnings	10.50 to 10.75
Composition Turnings	13.00 to 13.25
Lead, Heavy	5.00 to 5.15
Tea Lead	4.85 to 4.90
Zinc Scrap	4.90 to 5.10

Among the large orders for White Star oiling systems recently received by the Pittsburgh Gage & Supply Company, Chicago, Ill., are the following: Roland Park Electric & Water Company, Baltimore, Md.; Jones & Laughlin Steel Company, Pittsburgh, Pa.; Pennsylvania Railroad power station, Allegheny, Pa.; Link-Belt Machinery Company, Chicago; Bullock Electric Mfg. Company, East Norwood, Ohio; International Paper Company, Glens Falls, N. Y.; C. A. Cambrill Mfg. Company, Ellicott City, Md.; Hazard Mfg. Company, Wilkes-Barre, Pa.

Iron and Industrial Stocks.

NEW YORK, March 14, 1906.

The stock market has shown considerable variation in prices during the week, a continuously upward movement having occurred from Thursday until Saturday. On most of the active iron and steel stocks the highest prices were realized on Saturday, when Car & Foundry common touched 42⅞, Locomotive common 71⅜, Steel Foundries preferred 48, Colorado Fuel 66¼, Pressed Steel common 54¼, Republic common 31 and the preferred 105½, Cast Iron Pipe common 47, United States Steel common 41¾ and the preferred 107. A recession amounting to $1 to $2 per share occurred on Monday, which was followed by some recovery on Tuesday. Tennessee Coal was then conspicuous in running up to 152⅞, having sold down to 149 on Friday. Last transactions up to 1.30 p.m. to-day were made at the following prices: Can common 9, preferred 67¾; Car & Foundry common 42½, preferred 101½; Locomotive common 70, preferred 116¼; Steel Foundries common 12¼, preferred 47½; Colorado Fuel 65⅜; Pressed Steel common 53¾, preferred 98½; Railway Spring common 57; Republic common 30⅛, preferred 105¼; Sloss-Sheffield common 84; Tennessee Coal 151; United States Cast Iron Pipe common 46⅞, preferred 92; United States Steel common 41, preferred 105⅞.

The following figures have been published showing the operations of the Sloss-Sheffield Steel & Iron Company for the quarter ending February 28 (February estimated):

	1906.	1905.	Increase.
Net earnings	$430,867	$355,184	$75,683
Interest and taxes	61,350	60,000	1,350
Other expenses	16,401	.....	16,401
Total charges	$77,751	$60,000	$17,751
Balance	$353,116	$296,184	$57,932
Dividends preferred stock	114,000	114,000	.....
Surplus	$239,116	$181,184	$57,932
Previous surplus (actual)	2,691,479	2,330,399	361,080
Total surplus	$2,930,595	$2,511,583	$419,012

The American Car & Foundry Company announces that net earnings for the quarter ending January 31 last were $1,008,110, against $717,739 for the previous quarter and $625,311 for the first quarter of the present fiscal year, making a total of $2,351,160 for the three quarters. The net earnings for the 12 months ending April 30, 1905, after charging off $307,367 for new construction, were $2,628,117.

The Nova Scotia Steel & Coal Company, New Glasgow, Nova Scotia, reports that its profits for 1905 were $559,906, an increase for the year of $58,569. The increase in business over the previous year was $597,887. The directors, however, consider it unwise to declare dividends on the common stock at present.

American Car & Foundry Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable April 2.

International Silver Company has declared a quarterly dividend of 1 per cent. on the preferred stock, payable April 2.

General Electric Company has declared the regular quarterly dividend of 2 per cent., payable April 16.

Crucible Steel Company of America has declared a quarterly dividend of 1½ per cent. on the 7 per cent. cumulative preferred stock, ½ per cent. over the previous quarterly payment. This leaves about 15½ per cent. in overdue dividends.

Otis Elevator Company has declared a quarterly dividend of 1½ per cent. on the preferred stock and 2 per cent. on the common stock, both payable April 16.

Trade Publication.

Economic Steel Melting.—Gas Power & By-Product Company, Limited, 59 Bath street, Glasgow, Scotland. Pamphlet of eight pages with illustrated cover. An improved coal gasifying plant for open hearth steel furnaces is illustrated and described. The company builds gas producer plants, the gas from which after the by-products have been abstracted is adapted for the melting of steel in Siemens-Martin furnaces. It is stated that the value of the sulphate of ammonia recovered per ton of coal, over a long period, has exceeded the original cost of the coal. Plants are said to be under erection at a number of British steel works. The company makes a specialty of ammonia and by-product recovery plants and of the manufacture and utilization of gas for steel melting, for gas engines and for heating.

The Ariel Motor Car Company, which has had its headquarters in Boston, has taken the building at Bridgeport, Conn., formerly occupied by the Bridgeport Silk Company, and will manufacture automobiles on the premises.

Customs Contentions.

The Steel Wool Duty.

The Board of United States General Appraisers has held several sessions for the purpose of hearing testimony in the new test case which has been brought to determine the dutiable classification of steel wool. The Buehne Steel Wool Company, New York, appears as the protestant in the new case, although involved in a similar litigation in the United States Circuit Court of Appeals. In the previous test neither the Board of General Appraisers nor the Federal Circuit Court found a classification agreeable to the claims of the Government and the importers. The two tribunals mentioned held the wool to be dutiable under the provisions of paragraph 135, according to its value per pound, as "steel in all forms and shapes not specially provided for," whereas the Buehne Company argued for assessment under paragraph 137, which specifies the assessment on an article manufactured from steel wire worth less than 4 cents per pound. The contention of the Treasury Department is that the merchandise is properly dutiable under paragraph 193, which includes manufactures of metal, &c.

In the case now before the board counsel for the Government called many witnesses in support of the contention that steel wool should be classified as an article composed of metal not specially provided for, with duty at the rate of 45 per cent. Counsel for the Buehne Company stated to the representative of *The Iron Age* that the importers would not call any witnesses, but will rely on the testimony submitted in the earlier litigation. The American Steel & Wire Company was represented by special counsel with a view to assisting the Treasury Department in its effort to have the high ad valorem duty imposed. At the conclusion of the final hearing the board took the case under advisement. A decision will be promulgated early in May.

Zinc Ore.

Secretary Shaw's order issued last month to collectors and other officers of the customs to impose a 20 per cent. duty on imported zinc ore has resulted in formal protests being filed with the Board of United States General Appraisers. While some other importer's entry may eventually serve as the basis of the test suit to determine the classification of the ore the indications are that the case will stand in the name of the Cockerill Zinc Company, Kansas City, Mo. No date has been set for the initial hearing, but this will be announced shortly. The Secretary of the Treasury raised the duty at the instance of nearly 500 mine owners in Missouri and other States who claimed that their industry was being injured by the importation of zinc ore from British Columbia and Mexico. Until the Secretary's order the foreign ore was either admitted without duty or at the low rate of 1½ cents per pound upon such lead as happens to be found in it, which usually is only 2 or 3 per cent. According to the mine owners the low duty has encouraged importations to such an extent that the American industry is seriously menaced and expansion checked. The importers and smelters, on the other hand, propose to fight the 20 per cent. duty. The New Jersey Zinc Company has engaged counsel with the intention of being represented before the Board of Appraisers at the formal proceedings in order to supplement the efforts of the importers. Both sides declare the controversy will be carried through all of the courts. The litigation will probably continue two years, if not longer.

Open Hearings in Customs Cases.

Representatives of more than 100 prominent New York importing firms held a meeting at the Broadway Central Hotel March 7 to take action on the Olcott bill introduced in Congress for the purpose of liberalizing the customs administrative act. Herman A. Metz, Comptroller of the City of New York, presided. Several speeches were made in advocacy of the Olcott amendments and resolutions were adopted giving the unqualified and hearty approval of the merchants present to the measure. Most of those in attendance were in favor of so-called open hearings in reappraisement cases before the Board of Appraisers and resolutions to this effect were passed. Several importers, however, expressed themselves as opposed to the open proceedings before the customs court. By formal vote the Merchants' Association of New York and its Customs Committee received the thanks of the meeting for the work performed "in behalf of tariff administrative reform."

Marion De Vries, president of the Board of United States General Appraisers, has received official notification from the Secretary of the Treasury to grant open hearings in reappraisement cases coming before the customs court. Whether the proceedings will be open will be entirely optional with the board. The Secretary's order is as follows: "You are hereby directed that in reappraisement cases the hearing shall be open in the presence of the importer or his attorneys whenever in the judgment of the board the public interests will not be prejudiced thereby." It is understood that most of the members of the General Board are opposed to the plan for open hearings.

Steel Stampings for Dress Ornaments.

The Treasury Department has given notice that it will not accept as final the recent decision of the Board of United States General Appraisers regarding the dutiable classification of so-called steel stampings. It was held by the board that steel stampings used in the manufacture of steel point ornaments for women's dresses and hats were dutiable under paragraph 135 of the tariff law as pressed, sheared or stamped shapes. The Government at the time contended that the merchandise was properly dutiable at the rate of 45 per cent. ad valorem under the provision in the law for manufactures of metal. Collector Stranahan has been directed to file an appeal with the Circuit Court and the 45 per cent. rate will again be pressed before that tribunal. The issue is regarded as an important one in Treasury and importing circles owing to the heavy importations of articles of this kind. The difference, too, between the classifications is considerable.

The British Iron Market.

The pig iron market in Great Britain still shows the effect of the continued unloading of Cleveland pig iron warrants. As against 54 shillings 11 pence, which was high point this year, the price of warrants in the week preceding March 3 had fallen to 47 shillings 11 pence, a decline of 7 shillings, or $1.75, in a little more than a month. Makers' iron also sold lower, No. 3 Cleveland foundry iron having been quoted at 48 shillings 6 pence. The unsettling effect of this decline caused buyers to hold off, and the market for the time being is a waiting one. The daily additions to pig iron stocks in Connal's stores at Middlesbrough have been averaging about 1000 tons and the total is now in the neighborhood of 750,000 tons.

News from the United States that the pig iron manufacturers were meeting the demand without difficulty was construed unfavorably by British speculators who have been holding warrants for months in the expectation of a demand for British iron from the United States. In the finished lines the condition is somewhat similar to that in the United States, makers of nearly all forms of finished material being well employed. The demand, however, is not what it has been and while the quietness is considered by many to be but temporary, and to be succeeded by a new buying movement, there is now little prospect of any advance in prices. Plate manufacturers in the north of England have not been able to follow the example of Scotch plate mills, which a short time ago made an advance of 5 shillings per ton. Somewhat less demand for rails is noticed in certain quarters, but the syndicate price of £6 5s. for heavy sections is firmly maintained and some advance has been secured in a few cases.

The necessity for more active efforts in smoke prevention having been brought to the attention of the New York Health Department recently, Health Commissioner Darlington has stated that existing laws are sufficient to suppress smoke. The department has taken up the matter with the Interborough and Edison companies, which have been making some experiments recently. The considerable use of soft coal in New York has prompted the renewal of agitation against smoke.

The Sloss-Sheffield Steel & Iron Company.

The annual report of the Sloss-Sheffield Steel & Iron Company, which has just been made public, shows that the company realized large profits on its operations during the fiscal year ending November 30, 1905. A summary of the income account for the year is as follows, with comparisons:

	1905.	1904.	Increase.
Gross sales and earnings....	$5,747,074	$5,609,238	$137,836
Operating expenses, taxes, &c.	4,181,838	4,741,179	*559,341
Net earnings	$1,565,236	$868,059	$697,177
Fixed charges	210,000	210,000	.....
Balance	$1,355,236	$658,059	$697,177
Depreciation, &c	150,157	174,422	*24,265
Balance	$1,205,079	$483 637	$721,442
Preferred stock dividend....	469,000	469,000	.....
Balance for comomon.....	$736,079	$14,637	$721,442
Common stock dividend.....	375,000	.....	375,000
Surplus	$361,079	$14,637	$346,442

* Decrease.

The improvement in the company's working capital is shown by the following comparison:

	1905.	1904.	Increase.
Cash and cash assets.....	$2,760,716	$2,471,875	$288,841
Current liabilities	496,043	550,053	*54,010
Balance working capital..	$2,264,673	$1,921,822	$342,851

* Decrease

The general balance sheet as of November 30 last compares with that of the previous year as follows:

Assets.

	1905.	1904.	Increase.
Property account	$20,932,574	$18,375,306	$2,557,268
Treasury securities	273,834	259,700	14,134
Stocks and bonds of other companies	311,994	311,994	.....
Cash, bills and accounts receivable	1,562,173	1,344,109	218,064
Supplies, &c	550,137	464,998	85,139
Merchandise stocks at cost..	141,967	164,939	*22,972
Extension, repair and renewal fund.....	102,103	147,338	*45,235
Insurance and taxes unexpired	12,739	12,068	671
Total.....	$23,887,521	$21,080,452	$2,807,069

Liabilities.

Preferred stock	$6,700,000	$6,700,000	.....
Common stock.....	10,000,000	7,500,000	$2,500,000
S. I. & S. bonds (6%).....	2,000,000	2,000,000	.....
S. I. & S. bonds (4½%).....	2,000,000	2,000,000	.....
Current accounts	419,230	484,948	*65,718
Payrolls current month.....	76,812	65,104	11,709
Profit and loss (surplus)....	2,691,479	2,330,400	361,079
Total.....	$23,887,521	$21,080,452	$2,807,069

* Decrease.

From President Maben's report to the stockholders the following extracts are taken:

"The year was not one of extreme prices, the average price during the year at which your iron was delivered being just the average price obtained for deliveries during the last five years. The profit on iron was within $22,000 of that for 1903, which was by far the largest since the organization of the company, and greatly in excess of that of any other year.

"Your furnaces produced 20,000 tons less pig iron last year than they did the previous year, but over 72,000 tons more than in any other previous year. The decrease in output last year was due to several causes, the great scarcity of labor and the inability of the railroads to handle promptly the raw material for the furnaces being the chief causes. The strike among our coal miners, which was inaugurated July 1, 1904, continues, but we have maintained our mines on the open shop basis, and the effects of the strike are being felt less and less. The output of coal shows a decrease from the two previous years, but this was due more to our inability to procure cars and to the great scarcity and consequently the inefficiency of labor, which prevailed throughout the district throughout the entire year, than to the strike.

"The profits from business for the last year would have been considerably greater had the railroads been able to furnish cars for the transportation of our iron. In the last annual report it was stated that the company had begun its fiscal year with an accumulation of about 50,000 tons of iron on its furnace yards. Notwithstanding all of this iron, as well as our current make, was sold for several months ahead, that the customers were urging delivery and despite our every effort to secure transportation, the fiscal year closed with 5000 tons of iron more in our yards than we had at the beginning of the year, so that the earnings, as shown for the year, are based on the profits on less iron than was produced during the year, nothing having been realized from the accumulated stock, as no profit is counted on iron until it is shipped."

The president says that the furnaces are in good condition and made a creditable record in production. The only important new work undertaken in the company's coal fields during the year was the development of the Bessie mine, which, when in full operation, Mr. Maben says will be one of the best, if not the best, in the State. The management recently decided to open up the company's ore mines near Irondale, which were closed down some years ago. The output of these mines is now about 400 tons a day and will be largely increased within a short time. An output of 1500 tons can be easily obtained if desired. The cost of mining this ore is very small. It is conservatively estimated that there are 34,300,000 tons of good ore in this tract, such as is now being used by the furnaces of the district, and 7,750,000 tons in another seam of nearly as good quality.

Labor Notes.

A strike of Italians employed at the Cornwall iron mines, Cornwall, Pa., last week threatened for a time to interrupt the supply of ore to blast furnaces in that district. The strikers asked for an increase in wages from 13 cents to 20 cents an hour and 10 hours a day. The mining company offered a ten-hour day and 16 cents an hour, but this was refused. The sheriff called on Governor Pennypacker for assistance, and a detachment of the State constabulary was sent from Reading to protect the Hungarian workmen who were brought into the mines to take the place of the strikers.

The Allied Iron Associations of New York issued a statement in the past week reviewing the cases of violence and disorder which have accompanied the housesmiths' strike. It said in part: From November 28 of last year to March 1 of this year there have been 68 hospital cases through non-union men being attacked, starting shortly after the strike against Post & McCord began. This is independent of hundreds of attacks on non-union men where the latter were able to defend themselves, some of these cases being rough-and-tumble fights. Since the general strike of the housesmiths for $5 a day was ordered men employed by Milliken Brothers, the Henkel Iron Works, the Hecla Iron Works, J. B. & J. M. Cornell, the George A. Fuller Company and other firms in the places of strikers have been attacked. There have been five dynamite assaults and a number of attempts to wreck derricks. One non-union man named Jarstofer died several days ago from the effects of a blow from a lead pipe on February 7, while he was employed by one of the firms against which the housesmiths are on strike.

Lecturing on February 23, 1906, at the Royal Institution, London, on the "Internal Architecture of Metals," Prof. J. O. Arnold emphasized the necessity for a more correct knowledge of steel. The first line of defense of the country, he said, is largely dependent upon its armor plate, and it is above all things necessary that the metal forming that bulwark should be beyond suspicion. That depends on the men responsible for the internal architecture of the steel. In dealing with steel one has always to reckon with the unexpected, and there are dangers as well as difficulties arising out of saturated steel problems. A remarkable case was cited of a cruiser's boilers which passed the Government inspection test but subsequently failed on being subjected to a lower test. There is still a wide field, the speaker said, awaiting the investigator of steel problems.

The Machinery Trade.

NEW YORK, March 14, 1906.

In the general machinery trade the past week some very important projects have developed, and manufacturers whose products are used for the equipment of power and electric plants are bidding on a large horse-power of boilers, engines, turbines, generators, motors and a quantity of the apparatus that goes into a well equipped power plant, as well as such machinery as cranes and the like that are used in conjunction with the operation of large power plants. Not since the first of the year have so many large power projects come forward in a single week and not for a long time has the boiler and engine trade been asked to bid on such a quantity of equipment that will be purchased as soon as is practicable. As the equipment to be purchased is for entirely new central stations it will undoubtedly carry along with it purchases of machine tools, which will favorably affect the machine tool trade. This latter branch of machinery manufacture keeps up to a high water mark, though no large developments in the way of lists are reported.

In some sections of the country there has been some uneasiness in machine tool circles on account of the possibility of a coal strike April 1, but in this section there has been no falling off in business and the trade appears to have not taken a very serious view of the situation. What fears have existed have been allayed to a great extent by the generally accepted reports that the miners have effected an amicable settlement with the soft coal operators, and as a consequence manufacturing plants will not be affected. From a reliable source we learn that there is little likelihood of a strike in the bituminous fields, but that a strike of the anthracite miners is more than probable. The anthracite operators are said to be well prepared and it is thought that a strike will cause but little inconvenience.

Large Power Plant Specifications.

Specifications are out for a large power house to be erected by the New York, Westchester & Boston Railway Company, whose main offices are at 30 Broad street, New York. It is stated in a communication sent out by the City & County Contract Company, which also has offices at 30 Broad street and which will also receive the bids, that the power house is to be built on Long Island Sound somewhere between Rye and Mamaroneck on a site not yet selected. The bids are to be submitted to either the City & County Contract Company, of which T. D. Rhodes is president, or to William A. Pratt, who is chief engineer of the company. L. B. Stillwell of 100 Broadway is the consulting electrical engineer of the plant and Sargent & Lundy, who have offices in the Railway Exchange Building, Chicago, are the consulting mechanical engineers. The specifications for the power plant call for three steam turbo alternators with dependent auxiliaries, 24 water tube boilers, superheaters and parts, three open exhaust feed water heaters, six horizontal outside packed plunger boiler feed pumps, three surface condensers, 24 mechanical stokers and one 60-ton electric traveling crane. The bids are to be received on March 24. This is only the beginning of the purchasing which is to be done by the company, as it is proposed to erect transformer stations, which will number three or more, besides a machine shop which will probably include a repair plant. The plans for the machine shop and repair shop have not been taken up as yet, but it is thought that the engineers in charge will go into that matter next, and the trade can look for an extensive machine tool list from that source before many weeks. The company is constructing a four track third rail electric road through towns in Westchester County to connect with the subway system in New York. The City & County Contract Company has the contract for building the road and is subletting contracts for building steel bridges and the power house and machinery equipment. As all of the buying is to be done in New York the machinery business here will be directly benefited. The construction operations are already under way and considerable excavating and other similar contracting machinery has already been purchased.

Specifications have been completed and are now being sent out for bids by the Detroit Tunnel Company, Grand Central Station, New York, for the equipment for the large power plant and other electrical machinery that will be required for operating that part of the road of the Michigan Central Railroad adjacent to and through its proposed new tunnel under the Detroit River from Detroit, Mich., to Windsor, Ont. We understand that the size of the power plant, substation and the number of units is to be left entirely to the contractors and that bids are asked for the complete installation of the necessary equipment for electrifying the road. There will be required boilers, turbines, generators, electric locomotives and a very large amount of electrical apparatus and small equipment for the power house and substation. For the building of the tunnel, which is to be about 7860 feet long, a great deal of machinery will probably be required and work will likely be started now very shortly, as the bids for the construction of the tunnel are to be opened on March 22. W. J. Wilgus, chief engineer of the New York Central Railroad, has the matter in charge.

The Panama Canal Commission issued specifications on Monday from the office of the assistant purchasing agent at 24 State street, New York, for a power plant designed for furnishing light and power for the canal district. The plant will be put into commission as soon as possible and will be used in connection with the construction operations. The specifications call for a 325-kw. direct connected generator and engine, one 200-kw. alternator and engine, a 120-kw. belt generator and one motor, exciter with transformer, switchboards, etc., five vertical 125 horse-power boilers, one surface condenser of 2500 square feet cooling surface, two duplex boiler feed pumps of 700 horse-power capacity each and one 800 horse-power condenser, vacuum feed water heaters, purifier, filter and receiver complete. The power plant is to be installed at La Boca, on the Isthmus of Panama, and the bids are to be received at the office of the assistant purchasing agent, New York, until March 19.

The Norfolk Railway & Light Company, Norfolk, Va., intends to improve its property at Norfolk, Portsmouth and Berkley at a cost of about $1,500,000, $700,000 of which will be used for the construction of power stations, $500,000 for an extension of the road from Churchland to Suffolk, Va., and the balance for cars and improvements on right of way.

The Board of Public Works, Apalachicola, Fla., will receive bids until March 20 for two 66-inch x 16-foot boilers, two 1,000,000-gallon pumps, boiler feed pump and heater, air compressor and other supplies for the water works.

Machinery Requirements.

The Pennsylvania Railroad, through the purchasing agent, is making inquiries for a 1500-pound steam drop hammer, a geared trimming press with sprue cut off of ample capacity to serve a 3000-pound hammer which is being used for heavy work, a pillar slotter having a stroke not less than 40 inches, nor more than 48 inches; a cross feed of not less than 34 inches and an in and out adjustment of the tool holder of not less than 4 inches. The machine should have an extended base plate about 4 feet square, having slots for 1-inch tee head bolts. This machine is desired for machining front end splices of class H-8 locomotive frames. Detail bids are asked on clam shell and orange peel type of buckets for handling ore. The buckets are to be of the two-line style, and used in connection with locomotive crane for ore docks at South Buffalo. Separate bids are asked on buckets to handle 1, 1½ and 2 tons of ore. Complete specifications and sketches or prints should be furnished, including weight, dimensions, open and closed, cubical contents of bucket and what percentage of the cubical contents can be figured on for filling with ore in regular operations. The foregoing inquiries are made in addition to the regular tool and machine programme, which has not as yet been authorized.

The fact that the Dominion Steel Car Company, which was organized a short time ago to build steel cars in Canada, means to get down to business as soon as possible is illustrated by the activity of its engineers in rushing work on the plans. Provisions have already been made for the erection of the main building, which will be 150 x 500 feet, divided in the center by a row of columns. About 700 tons of steel will go into the construction of the building, and each side of the shop will be served by traveling cranes which will approximate 75 feet span, and there will be a traveling crane outside for taking care of the material in the yard. The shop will be equipped with pumping, shearing and riveting machinery besides other tools necessary for steel car construction, and it is intended that the plant at first will take care of about 15 cars a day. No plans for the power house have been prepared as yet, except in a general way, but it is expected that announcement will be made very shortly as to the size of the plant. The Dominion Steel Car Company is closely affiliated with the Simplex Railway Appliance Company of Canada and 42 Broadway, New York, and it is intended later on to extend its operations so as to include the manufacture of wooden cars. As a matter of fact it is thought that the plans of the company include an extension of even the steel car plant as soon as is practicable.

During the past year the machinery trade in this city has secured orders for considerable machinery for equipping the extensions made to the plant of the Standard Roller Bearing Company, Philadelphia, Pa., and now that the company has decided to do further extensive building it is probable that many of the merchants will get a share of the orders to be placed for machinery to equip the new building. The company has increased its capital stock from $2,000,000 to $3,500,000 to provide for the enlargement of its plant and equipment. A four-story building 150 x 200 feet will be immediately erected for the manufacture of annular ball bearings on which the company owns basic patents. It will be remembered that the company built and equipped with machinery during the year a four-story building 95 x 200 feet, an iron foundry 70 x 150 feet, two-story hardening and tempering building 70 x 150 feet and a crucible steel casting plant 60 x 100 feet. With the new building, which will be constructed as soon as possible, the company will employ 1000 hands in the manufacture of steel balls, ball bearings,

roller bearings, automobile axles and annular ball bearings.

A new plant is to be erected by the Kennedy Valve Mfg. Company, Coxsackie, N. Y., at Elmira, N. Y., and when it is completed the company will give up its plant at Coxsackie, confining its manufacturing to the city of Elmira, where it will enjoy better railroad facilities and will have the advantage of a larger and more up to date plant. The company has been considering the advisability of moving from Coxsackie for some time, but was unable until very recently to secure a suitable site. Work on the new plant will be begun as soon as possible and it will be rushed to completion. The company has purchased about 20 acres of land and is erecting a plant covering about 100,000 square feet. The buildings will be of modern steel and brick construction, and it is proposed to erect, besides a main structure, a power house, iron and brass foundry, an iron machine shop, a brass machine shop, assembling, testing and tool departments and other adjuncts for the manufacture of its line of valves, hydrants and other specialties. Plans are being prepared for the buildings under the direction of T. C. Flynn, mechanical superintendent of the company, and it is proposed to first complete some of the departments, more probably the foundries, and to commence manufacturing in Elmira as soon as possible. As the other buildings are erected the departments will be moved from Coxsackie, and it is probable that before next winter sets in the company will be doing all of its manufacturing at Elmira. Mr. Flynn will establish an office at Elmira as soon as practicable, and he is desirous of receiving catalogues of building material and machinery equipment such as might be used in the plant. Until he takes up his office at Elmira Mr. Flynn can be addressed in care of the Chamber of Commerce, Elmira, N. Y., as he does not expect to go into the question of purchasing equipment until he moves his office to that city. The company makes a specialty of brass and iron body, gate, globe, angle, check, radiator and safety valves, fire hydrants, &c. While considerable of the machinery equipment will be moved from Coxsackie, it is the intention to make the new plant as modern as possible, and as it will be considerably enlarged much new equipment will be purchased.

As soon as the Standard Sanitary Mfg. Company, Pittsburg, Pa., can prepare plans and specifications for its new plant at Camden, N. J., it is likely that machinery merchants will be favored with orders for quite a lot of new machinery. At Camden the company has purchased about 12 acres of land on the Pennsylvania Railroad, where it will expend about $500,000 in constructing and equipping the new plant as soon as work can be commenced. The company is at work on the plans for the new buildings, but they are not yet far enough along to determine the exact dimensions of the buildings that will be erected. It is expected that when completed the plant will give work to about 1000 men.

The American Wood Working Machinery Company is engaged in the erection of a new plant at Gates, Rochester, N. Y., on Lyell avenue, near the Otis station of the New York Central Railroad. The rear of the plant will abut on the railroad tracks. It is contemplated to concentrate two or three of the present branches of the company at this place, one of which will be the present Rochester branch, the F. H. Clement Company. The lot contains 10 acres, on which six buildings will be erected. The pattern storage building, two stories, 60 x 120 feet, is already built. The pattern and carpenter shop will be of the same size and also two stories high. The foundry will be a 110 x 200 foot building, and an annexed stock building will be 30 x 160 feet. The power house will be 50 x 100 feet. The largest building will be the machine shop, one story high, 570 feet long by 180 feet wide. Its central bay will be 60 feet wide, the length of the building and 30 feet high, and will contain traveling cranes. The office building will be two stories, 50 x 100 feet. The machine shop, office, pattern shop and pattern storage will face on Lyell avenue. The engineer for the new work is Edwin B. Higby of Rochester.

The W. P. Davis Machine Company, Rochester, N. Y., has work on its new buildings well under way. The new site has a 200-foot frontage on St. Paul street, opposite the New York Central tracks, and is 300 feet deep. The main machine shop will be a steel frame brick building, 140 x 150 feet, facing on St. Paul street, and will contain a 10-ton traveling crane. A 40 x 88 foot brick building, three stories high, will be used as a pattern shop and storage for engines, boilers and generators. Adjoining this building on the south there will be a building 75 feet long by 30 feet wide, and a switch from the railroad will run transversely through both buildings. The machinery store will be 160 feet long by 40 feet wide, will include four stories and a basement, and will be of mill type construction. A lot across the street, 58 x 133 feet, has been purchased for future extensions. The present work has been so designed that it may ultimately be converted into a machine manufacturing plant when the store will be erected on the other site.

Those who follow the trade in sugar mill machinery have been capturing a good deal of business for export to Porto Rico and Cuba of late, and it is said in the trade that there is a good deal of buying still to be done in New York for those islands. Within the last two years American trade in this line has developed wonderfully in both of those highly productive sugar regions, and, judging from the projects now under way by the United Fruit Company and similar corporations, the buying will continue heavy during the summer. At least two firms landed through their New York offices this week big orders for sugar mill machinery both in Porto Rico and Cuba, and it is declared that there is still much buying to be done from the same source. In connection with export trade it is interesting to note that American manufacturers of electrical equipment have succeeded in breaking through the lines established by England and Germany in India, and in consequence manufacturers here are getting considerable business from that source. The General Electric Company recently received an order for a large amount of electric equipment for a power plant in North India which will be installed on the Jhelum River. The plant will eventually develop 100,000 horse-power capacity and will be used for both lighting purposes and to operate a railroad as well as furnishing power for textile industries in that section.

The Hooven, Owens, Rentschler Company, 39 Cortland street, New York, has received an order from Chicago for a cross compound vertical engine direct connected to a 1000-kw. generator, as well as orders for a 350 horse-power tandem compound engine for the Raritan River Clay Company, Perth Amboy, N. J.; two 200 horse-power engines for a sugar mill at Porto Rico, one 250 horse-power engine for the Rochester River Pipe Company, Rochester, N. Y., and two direct connected engines for the Adams Bay Company, Cleveland, Ohio.

Within a few days bids will be asked for completing the filtration plant at Philadelphia, for which work about $4,000,000 is now available. It is estimated that it will take about $7,000,000 to complete the system. It is understood that the first bids to be asked will be for the pumping machinery to lift the water from the Delaware River into the Torresdale filtering beds. It will be remembered that bids for a great deal of this work were awarded some time ago, but have been annulled by the present administration.

Business Changes.

H. F. Frevert, trading under the name of the Frevert Machinery Company, is now comfortably located in his new and commodious showroom at 18 Dey street, New York, where he will carry a large line of new and second-hand machinery, acting as agent for many prominent manufacturing companies. Among the concerns for which Mr. Frevert has secured the exclusive agency in this city are the following: Diamond Machine Company, Providence, R. I., emery grinding and polishing machinery; George D. Walcott & Sons, Jackson, Mich., lathes, shapers and rack cutters; Brightman Mfg. Company, Shelby, Ohio, shafting machinery and turned shafting; Reading Chain Block Works, Reading, Pa., multiple gear chain hoists; Builders' Iron Foundry, Providence, R. I., grinding and buffing machinery; R. A. Kelly Company, Xenia, Ohio, crank shapers. In addition to representing machine tool builders Mr. Frevert will manufacture electric traveling cranes, &c.

The Edge Moor Iron Company has appointed Mackenzie, Quarrier & Ferguson, 114 Liberty street, as its New York representatives for the sale of its well-known water tube boilers.

Chicago Machinery Market.

CHICAGO, ILL., March 13, 1906.

There is no falling off in the demand for machine tools, although the absence of noteworthy large lists would indicate decreased requirements and fewer extensions. Both manufacturers and dealers report a satisfactory volume of orders, largely for individual tools, and the large percentage is for installation in implement plants whose equipment is insufficient to meet the heavy demand for vehicles and agricultural tools. Orders continue to be placed almost daily for new machinery for the South Works of the Illinois Steel Company and the new plant to be erected at Toleston, Ind. Eastern manufacturers of rolling machinery have taken most of the orders for the heavy equipment thus far placed, although a large amount is still under negotiation. Manufacturers are not catching up on their orders very rapidly and deliveries, except from stock in dealers' hands, are deferred from two to four months.

The Independent Pneumatic Tool Company, Chicago, has purchased about $50,000 worth of new machinery, including lathes, drill presses, grinding machines, &c., most of which was placed with the Chicago office of Manning, Maxwell & Moore. The Independent Company has leased two large floors in a building adjoining its plant at Aurora, Ill., where this machinery will be installed. The company expects to build an addition to its plant in the near future, having outgrown present quarters. It is already about six months behind in the filling of orders.

The Keller Mfg. Company, Sauk Center, Minn., manufacturer of wagons and agricultural implements, will operate a new plant at Joplin, Mo. A building has been secured, 76 x 900 feet, and this has been cut in two and the width increased. The dimensions of each of the buildings when improvements are completed will be 100 x 450 feet, two

stories in hight. Considerable machinery has already been purchased for the new plant, although the company is still in the market for wood working tools, wagon making machinery and several gas engines. Henry Keller is president.

The Northwestern Steel & Iron Works, Eau Claire, Wis., will double its capacity this spring. The company makes a specialty of portable engines, from 2 horse-power up, for use on farms and with portable saw mills.

The Murray Iron Works Company, Burlington, Iowa, is contemplating the enlargement of its boiler shop and will probably install another hydraulic riveter. Orders have already been placed by the company for a Corliss cylinder boring machine, one turret lathe, one milling machine and one motor driven splitting shear, as well as an additional molding machine for the foundry. The company has recently taken up the manufacture of the Prenzel force feed roll and during the past year brought out a new disk sharpener, which it is stated is received with high favor by the country blacksmiths.

Joseph T. Ryerson & Son, Chicago, among other contracts closed recently, report the following: Illinois Steel Company, 50-inch drill press, 8-foot Lennox rotary shear, C. & A. splitting shear and a number of heavy punches; punches and drills for the Comanche Mining & Smelting Company, Bisbee, Ariz.; 8-foot Lennox splitting shear, Kewanee Boiler Company, Kewanee, Ill.; 8-foot Lennox shear, Union Iron Works, Spokane, Wash.; Lennox bevel shear, Pennsylvania Steel Company, Steelton, Pa., and a similar shear to Potter Brothers, Pottstown, Pa.

Following the starting of the 1500-kw. Allis-Chalmers turbine unit at the plant of the Utica Gas & Electric Company, Utica, N. Y., and the recent installation of a 5500-kw. unit at the Williamsburg station of the Brooklyn Rapid Transit Company, the Allis-Chalmers Company, Milwaukee, has installed and now has under construction 28,000 kw. in turbine alternator units. The New York Edison Company, New York; Westchester Lighting Company, New Rochelle, N. Y.; United States Locomotive Equipment Company, Dayton, Ohio, and the Memphis Consolidated Gas & Electric Company, Memphis, Tenn., each has on order a 1500-kw. unit. Three 1500-kw. units have been purchased by John I. Beggs, president of the Milwaukee Electric Railway & Light Company, Milwaukee, for installation in the power house of the new terminal station and office building, which is rapidly nearing completion. The latest additions to the list are the Kokomo, Marion & Western Traction Company, Kokomo, Ind., recent purchaser of a 1000-kw. unit, and the Western Canada Cement & Coal Company, Calgary, Canada, which has just placed an order for three units, each of 1000 kw. Other contracts recently taken cover a large number of engines, electrical equipment, &c.

The Stiles-Morse Company, Chicago, announces the removal of its offices on March 15 from 65 West Washington street to room 201 Western Union Building. The company is selling agent for sheet metal working machinery manufactured by the E. W. Bliss Company, Brooklyn, N. Y.

The Hills-McCanna Company, Chicago, which was incorporated in 1888, has taken over the business of Robert E. Hills and will continue in the steam specialty business. Mr. Hills, in his announcement to the trade, states that the change was the result of the fact that both companies have been extending and there were conflicting interests, and in the future he will give all his time and attention to the combined business as president and treasurer of the company.

Dividends.—Sloss-Sheffield Steel & Iron Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock and the regular semiannual dividend of 2½ per cent. on the common stock, both payable April 2.

Philadelphia Machinery Market.

PHILADELPHIA, PA., March 13, 1906.

There has been a better demand for some classes of machine tools during the past week. While the amount of business placed has not aggregated a very large figure, it has been enough to encourage the belief that general business in this territory will become more active at an early date. The one particular element of uncertainty at the present time, however, is the possibility of a coal strike, and until that matter is settled it is hardly anticipated that much improvement can be expected. At the present time it is impossible to fathom what the outcome will be. One day indications appear favorable for some agreement between the miners and operators, while the next day an agreement appears hopeless. Manufacturers are protecting their interests in view of a strike. Raw materials are being stocked in some cases, while others are transacting their business along very conservative lines. In the mining districts would-be purchasers of tools and machinery are withholding their orders for the time, and should a satisfactory settlement of the difficulty be reached there is no doubt that there will be quite a rush of this deferred business. Locally both manufacturers and dealers are feeling the withdrawal of this immediate business, the former, however, not to as great an extent as the latter, who are well booked with orders at the time.

Inquiries have improved and appear to cover the general line of tools and equipment, the greater part of the demand being for small lots and for single tools for extension and replacement. Railroad requirements are light, and the absence of specifications covering any large equipment for new shops in this territory continues.

Manufacturers have as much business on their books as they can conveniently handle; plants are being operated at their full capacity and in many instances are working overtime in order to make deliveries, which are even then frequently delayed considerably beyond the expected time. Definite dates on future deliveries are being refused in some cases pending settlement of the threatened coal strike.

The demand for second-hand machinery, boilers and engines continues fairly active, but is not as good as it has been. The same conditions which govern the market in general are applicable to this branch of the machinery trade, and it is expected that the demand will not be largely increased until conditions are more settled.

The foundry trades continue very active and specifications are coming out freely both for gray iron and for steel castings. The gray iron foundry situation continues to improve and deliveries on machinery castings are reported more prompt than for several months back.

Steel casting plants are taking on a large tonnage of business and find it difficult in a number of cases to meet deliveries asked for by their customers.

The Midvale Steel Company has awarded the contract for a new fireproof blacksmith shop to be erected at its Nicetown plant to Henry Brockelhurst, contractor and builder. It will be 24 feet high and measure 80 x 180 feet, and will be constructed largely of reinforced concrete.

John Nuttall, dealer in second-hand machinery, engines and boilers, has let a contract for a new warehouse on Fifth street, below Montgomery avenue. It will be three stories high, 50 x 100 feet, and of slow burning construction. The new building will be used for the storage and display of machinery and tools, and a portion will also be used as a machine shop.

Milligan & Weber, architects and engineers, 520 Walnut street, have prepared plans for a ten-story fireproof factory building to be erected in this city at an estimated cost of $450,000. It will measure 98 x 220 feet and reinforced concrete will enter largely in its construction. Specifications provide for an electric power plant, four elevators and a sprinkling system. Bids will be received for the work on March 26. The location of the building, together with the name of the owner, is withheld for the present.

The Baltimore & Ohio Railroad Company has filed plans with the Bureau of Building Inspection for extensive terminal improvements in the southern section of the city. The proposed improvements include the construction of a large roundhouse, car and locomotive repair shop, general utility shop and extensive freight yards. It is probable that work will be started at an early date and that after its completion the buildings now being occupied for the above purposes will be abandoned. The improvements occupy land between Twenty-fifth and Dickinson streets and Thirty-sixth street and the Schuylkill River.

I. H. Johnson, Jr., & Co., Inc., are very busy. The demand for lathes has been good and a large number of orders are on the company's books. Sales recently covered a number of tools ranging from 18 to 60 inch swing, with varying lengths of bed. Several large lathes weighing up to 100,000 pounds each have been furnished several customers, while others of different sizes and weights have been shipped to both Eastern and Western steel plants. All departments of the plant are being operated at full capacity and orders for heavy tools are being taken for extended delivery only.

Dienelt & Eisenhardt, Inc., note an increased demand for dead stroke hammers, hydraulic jacks and for their line of Monarch electrical generators and motors. The foundry department of their plant is running at full capacity on a general line of castings, while the machine shop is crowded with general and special work. Hydraulic jacks are being shipped in quantity to the various railroads and other customers. A number of both generators and motors have been furnished various customers and a large number are still on order.

The E. H. Mumford Company finds inquiries for foundry molding machines extremely good from all classes of foundries, and a number of very satisfactory orders have recently been booked from parties in the New England, Middle and Central Western States, including among others five 13 x 18 split pattern power ramming machines, three 12-inch power ramming machines, one 14 x 16 and one 20 x 20 split pattern power ramming machine and a 36-inch square power rammer. A 14 x 16 split pattern machine and a large power rammer are also to be shipped for export to England. Two 14 x 16 and one 13 x 18 Rathbone-Mumford multiple molding machines, including flasks, on which a production of 60 molds per hour is guaranteed by the makers with one man (working in gray iron) are also being built for one of its customers.

The Champion Blower & Forge Company, Lancaster, Pa., began operating its new foundry on the 8th inst. The new building is 70 x 360 feet, equipped with job and traveling cranes, three cupolas having a capacity of 45 tons

daily, sand blast apparatus and an independent power plant. The old foundry department of the plant will be turned into a machine and erecting shop, 14,000 square feet being available for this purpose. Nearly all of the equipment for the machine shop is of a special character, for which orders have already been placed. The Champion Company has had a heavy demand for its line of Nos. 400 and 200 blowers, as well as for lever and self feed drills, and has found it necessary even with its increased facilities to go into the market for castings for whirlwind blast tuyere irons, one order for 5000 of which was recently placed. The improvements under way and in contemplation will enable this company to increase its facilities over 50 per cent.

New England Machinery Market.

WORCESTER, MASS., March 13, 1906.

The machinery dealers report conditions unchanged. Manufacturers are occasionally heard to say that inquiries have fallen off to some extent during the past few weeks. Others report the contrary to be true and that there is an increase, if anything. Where it is an impossibility to get deliveries better than late summer some cautious buyers are hesitating, watching for any sign that would indicate a let up in general business. It is needless to say that no such sign has yet appeared. Some of the machine tool manufacturers are striving to lay out their product so that they can live religiously up to their promises of delivery, believing that the obligation on their part at this time is much greater than in less prosperous days and that to establish the reputation for promptness will count later on when times are not so good.

The semiannual meeting of the National Machine Tool Builders' Association will be held at the Chalfonte Hotel, Atlantic City, Tuesday and Wednesday, May 1 and 2. It is the intention of President E. M. Woodward to make it a strictly business meeting. No guests will be invited. Immediately after the meeting is called to order the various sections representing the various classes of machine tools will retire to meet as committees and when their work is completed the meeting as a whole will be resumed, thus making it certain that all members may be present during the deliberations of the association. Thus the first day will be devoted to committee work probably, and the second to the general meeting. A programme of the business to come before the convention will be issued later. It is certain that there will be a large attendance, the place of meeting being an additional attraction, which will bring together not only the members but in many instances their wives.

The Boston local association of the National Supply and Machinery Dealers' Association will hold its second meeting Thursday, when important matters will come up for private consideration. At the first meeting committees were appointed to take up the various questions of interest to the trade and important results are expected, working to the mutual advantage of the dealers and the manufacturers. The manufacturers of both machine tools and supplies are doing everything in their power to co-operate with the plans of the local association, especially with a view to bringing to an end the cutting of prices. The association will have no distinctive name beyond that of the local association of the National Supply and Machinery Dealers' Association. Formal organization with officers may be effected later, but probably not for the present. Meetings will be held biweekly until the work mapped out has been consumated.

The action of the manufacturers of chucks in procuring a uniform price to dealers and also a uniform minimum resale price is working out excellently. The dealers by their agreement will be insured a profit, which has been the exception in the past, the competition having been exceedingly keen. It is said that dealers were fortunate when they made anything on their sales of chucks. To-day under the new arrangement, while the profit is not large it is at least a profit, and satisfaction is universally expressed with the new order of things. The local association will have an important function in furthering this class of agreement between dealers, and doubtless between manufacturers.

The Charlestown Navy Yard is establishing a new system of buying small tools, hardware and other small wares for its various departments, and the machinery dealers are hoping that the system will extend to purchases of machine tools. There will be one central purchasing office, with sample rooms, where the various classes of standard goods may be permanently displayed and purchases will be by sample. There has been much fault found both among the dealers and at the navy yard because of frequent purchase under substitute bids instead of under the specifications sent out, the wording of the specifications permitting this substitution. With small tools specifications will be according to sample, the dealers have been informed, and they are pleased with the outlook. Some houses which have of late months kept out of this market because of what seemed the impossibility of success against the lower bids on substitute goods are now entering the field, because they feel that there is some assurance of meeting only legitimate competition. This new condition has not yet extended to machine tools, but it is hoped that the success of the experiment with small tools will lead to a change in the present system under which the lower bids of a manufacturer or dealer who has something cheaper to sell is generally accepted at Washington, whether or not the tool is what is needed at the yards. This is the open complaint of the machine tool dealers and the private complaint of officials at the navy yard.

Waterbury, Conn., is to have a new industry, the Waterbury Metal Company, which will begin the manufacture of German silver and other specialties on a considerable scale. The company is incorporated with a capital stock of $100,000, the incorporators being Abel Kenworthy, Frank P. Welton and Robert D. Somers. Twelve acres of land have been purchased in the northwestern part of the city. Three brick buildings will be erected immediately, one 100 feet square, a casting shop 50 x 100 feet, capacity of 20 furnaces, and a power house. It is planned to have the plant completed in the late summer and to begin manufacturing in the autumn. The Kenworthy Engineering Company, Waterbury, is the engineer in charge of the work. Considerable equipment will be required. The Kenworthy Company states that it will have to confine agents from the various houses to visits by appointment. The company wishes to be conversant with all the best equipment in the market and will be glad to make the necessary appointments.

The United Drug Company, Boston, Mass., is to erect a five-story addition, 100 feet long, to its plane plant and will require equipment to furnish about 250 horse-power.

In order to properly handle its increased business in New England Warren Webster & Co., Camden, N. J., manufacturers of steam heating apparatus, vacuum feed water heaters and purifiers, &c., have removed their Boston office from 1116 to 1108 Penn Mutual Building, where more commodious quarters have been secured.

Cincinnati Machinery Market.

CINCINNATI, OHIO, March 13, 1906.

Trade in machine tools during the past week has shown no signs of falling off. While there have been no special large individual orders booked considerable new business in the way of small orders has come forward, and the result is that everybody is just as busy as he can be. The foreign trade continues to be far above normal, but of course the large majority of builders are drawing most of their business from domestic sources, which is exceptionally general and comes from all sections of the United States. The agitation of the German tariff has not been without beneficial results and quite a number of rush shipments have been forwarded.

More or less uneasiness is noted among local manufacturing industries in regard to the outcome of the controversy between the coal operators and miners. It appeared reasonably certain last week that a settlement was in sight, but developments since that time show the situation to be anything but satisfactory. While reports indicate that a number of plants have considerable coal on hand to meet an emergency of this kind, there is no disputing the fact that many would be crippled to such an extent that it would require months to recuperate.

The exceptionally mild winter has not been without its benefits to several industries. Take, for example, the structural interests, which with few exceptions have been able to continue work during the entire season. Again, as the natural ice crop has been a complete failure and dealers were unable to gather a single pound it has had the effect of placing the manufacturers of artificial ice machinery in the front ranks, and plants of this character are crowded with work endeavoring to supply the demand.

The Industrial Bureau, through Secretary Finch, is putting forth every endeavor toward securing new plants to locate in this city. At this time President William Lodge and F. H. Ballman are visiting a town in northern Indiana negotiating with parties who have made overtures in this direction and it is hoped that satisfactory arrangements may be made to induce them to come.

The new steel castings plant is being pushed forward as rapidly as possible and the company hopes to be ready for active operations some time in May. Switches now connect the plant with one of the railroads and the structural work and other material are being handled in a more satisfactory manner than formerly. The policy of this company is to seek industries that will consume its product and make such arrangements as will consume the entire output of the plant. Such negotiations are now in progress and everything appears assured for an auspicious opening.

The I. & E. Greenwald Company, manufacturer of boilers, engines and gears, the oldest concern of its kind in this city, has been purchased by a syndicate of Cincinnati capitalists, at the head of which is Henry Burkhold, one of our most enterprising and influential citizens. Mr. Burkhold states that the policy of the company will be radically changed and be made more aggressive. It is the intention either to enlarge the present plant or, if deemed best, to secure a new location and build thereon a plant that will have more than double the capacity of the present one. The reorganization, which takes place on the 14th of the month,

contemplates an increase of capital to $500,000, of which $300,000 will be common and $200,000 6 per cent. cumulative preferred stock. The name will not be changed, but an entirely new official list will administer its affairs.

Dravo, Doyle & Co. have been awarded the contract for electric generating machinery for the Eastern pumping station at their bid of $28,692.

The L. Schreiber & Sons Company, whose plant on Eighth street was recently damaged by fire, has begun the erection of a brick and steel structure adjoining its other buildings at Norwood. This building will be 70 x 400 feet and will be used for ornamental iron work, taking the place of the second story of the Eighth street plant. The central bay, which is 41 feet high, is to be equipped with a traveling crane 23 feet from floor to crane rail and be covered with a saw tooth roof. The lean-to, which is 30 feet high, will be a two-story structure and be used for general purposes. The company suffered considerable inconvenience as a result of the fire, but was able to carry forward all contracts without serious delay. Such of the present equipment as can be utilized will be removed to the new plant and additional machinery will be secured.

The D. T. Williams Valve Company has outgrown its present location and is negotiating for the purchase of a strip of ground on which will be erected a plant costing approximately $150,000. The location, which up to the present time is being kept secret, is said to be in the heart of the city and to be especially adapted for manufacturing purposes. This company has made a remarkable record during the first year of its existence, having found present facilities entirely inadequate to take care of its growing trade. It is finding a ready market for its product among the large shipbuilding interests and navy yards of the country. It has been found necessary to add a number of lathes during the week. A large business is also done along the line of automobiles. The new plant will be equipped with all the latest and most improved machinery, which contemplates the purchase of quite a list.

Government Purchases.

WASHINGTON, D. C., March 13, 1906.

A motor is included in the large amount of supplies for which the Bureau of Supplies and Accounts, Navy Department, Washington, is asking bids until March 27 for the Eastern navy yards.

The following bids were opened March 3 for supplies for the Isthmian Canal Commission:

Bidder 31, Handlan-Buck Mfg. Company, St. Louis; 49, Niles-Bement-Pond Company, New York; 55, Pratt & Whitnew Company, Hartford, Conn.; 91, Manning, Maxwell & Moore, New York.

Class 83. One toolroom engine lathe—Bidder 55, $780; 91, $746.70.

Class 84. One heading and forging machine—Bidder 31, $1490; 91, $1489.51.

Class 85. One hand bending rolls—Bidder 31, $470; 49, $647.

The following bids were opened March 6 for machinery for the navy yards:

Bidder 1, Alliance Machine Company, Alliance, Ohio; 2, Ajax Mfg. Company, Cleveland, Ohio; 4, American Woodworking Machinery Company, New York; 7, George F. Blake Mfg. Company, New York; 8, Brown & Sharpe Mfg. Company, Providence, R. I.; 9, E. W. Bliss Company, Brooklyn, N. Y.; 12, Blaisdell Machinery Company, Bradford, Pa.; 13, Bignall & Keeler Mfg. Company, Edwardsville, Ill.; 15, Becker & Brainard Milling Machine Company, Hyde Park, Mass.; 16, Charles H. Besly Company, Chicago, Ill.; 22, California Hydraulic Engineering & Supply Company, San Francisco, Cal.; 26, A S. Cameron Steam Pump Works, New York; 27, Compressed Air Machinery Company, San Francisco, Cal.; 28, Chicago Pneumatic Tool Company, New York; 33, Clayton Air Compressor Works, New York; 37, M. T. Davidson, Brooklyn, N. Y.; 39, Diamond Machine Company, Providence, R. I.; 40, Drew Machinery Agency, Manchester, N. H.; 42, Eaton, Cole & Burnham Company, Bridgeport, Conn.; 43, Erie Foundry Company, Erie, Pa.; 44, J. A. Fay & Egan Company, Cincinnati, Ohio; 46, Walter H. Foster Company, New York; 48, Fairbanks Company, New York; 49, Gregg Company, Limited, Newburgh, N. Y.; 53, Garvin Machine Company, New York; 56, Henshaw, Bulkley & Co, San Francisco, Cal.; 58, Hallidie Machinery Company, South Seattle, Wash.; 59, Handlan-Buck Mfg. Company, St. Louis, Mo.; 60, Hendey Machine Company, Torrington, Conn.; 64, Ingersoll-Rand Company, New York; 69, Kilbourne & Jacobs Mfg. Company, Columbus, Ohio; 73, Monarch Engineering Mfg. Company, Baltimore, Md.; 75, Manning, Maxwell & Moore, New York; 83, Manhattan Supply Company, New York; 89, Niles-Bement-Pond Company, New York; 93, Pilling Air Engine Company, Detroit, Mich.; 96, Pratt & Whitney Company, Hartford, Conn.; 97, Pacific Tool & Supply Company, San Francisco, Cal; 98, Prentiss Tool & Supply Company, New York; 101, Royce & Ricketts, Washington, D. C.; 105, Railway Appliances Company, Chicago, Ill.; 106, Rockwell Engineering Company, New York; 110, Sanson & Rowland, Philadelphia, Pa.; 119, J. Jacob Shannon & Co., Philadelphia, Pa.; 122, George C. Thomas, New York; 124, The Van Dyck-Churchill Company, New York; 130, Ernst Wiener Company, New York; 134, Chandler & Farquhar Company, Boston, Mass.

Schedule No. 356.

Class 1. One pipe cutting and threading machine—Bidder 13, $630; 40, $1015; 42, $740; 46, $750; 48, $820; 53, $577; 59, $850; 89, $785, $620, $660; 101, $572; 119, $750; 124, $517.

Class 2. Ten single dump cars—Bidder 49, $2041.80; 59, $2500; 69, $1755 and $2518; 119, $1421.40; 122, $1520; 130, $1525.

Schedule No. 357.

Class 11. Two steam drop hammers, 800 pounds, double frame, suitable for drop forge frame—Bidder 1, $2750; 43, $2855; 75, $2200, $2360, $2398 and $2612; 89, $2410.

Class 12. Two steam drop hammers, 2000 pounds—Bidder 1, $4950; 43, $4555; 75, $4200, $4900, $4800, $5200; 89, $4260.

Class 13. One trimming press, geared 4-inch stroke—Bidder 9, $1600; 40, $1294 and $1199; 75, $1325; 101, $1572.

Class 14. One trimming press, suitable for trimming drop forges—Bidder 9, $690; 40, $626 and $558; 75, $630; 101, $685.

Class 15. One forging machine—Bidder 2, $7025.

Class 16. One heading, upsetting and forging machine—Bidder 2, $1825; 40, $1955; 101, $2825 and $1971.

Class 17. One back geared crank shaper—Bidder 53, $425; 60, $400; 75, $400; 98, $589.25; 101, $410; 134, $360.

Class 18. One die sinking machine—Bidder 15, $735; 89, $450; 96, $890.

Class 19. One planer, high speed, with two heads—Bidder 134, $925.

Class 20. Two vertical milling machines, with 20-inch rotary table—Bidder 15, $1448; 53, $1000; 75, $1550; 98, $1470.

Class 21. Two vertical milling machines, with 27¾-inch rotary table—Bidder 15, $2844; 53, $1996; 59, $2920; 75, $3030; 98, $2100.

Class 22. Three heating furnaces or forges—Bidder 134, $285.

Schedule No. 358.

Class 31. One double cabinet makers' saw, complete with motor—Bidder 4, $545; 44, $750; 83, $874.

Schedule No. 359.

Class 41. One 3¼-inch cutting off motor driven machine—Bidder 96, $850.

Class 42. One motor driven Landis 2-inch single head bolt cutter—Bidder 40, $511; 46, $730; 59, $750; 101, $535.

Class 43. One gypsy air winch—Bidder 93, $515; 105, $500.

Class 44. One No. 2 Rockwell double chamber melting furnace—Bidder 73, $375 and $425; 106, $1595.

Schedule No. 360.

Class 55. One self contained straight line steam driven air compressor and one steel air receiver—Bidder 12, $720 and $820; 22, $792; 27, $775; 28, $659.50; 33, $705; 40, $904 and $810; 60, $646; 64, $633.

Class 65. One disk grinder, motor driven—Bidder 16, $775.50; 39, $625; 97, $777.50.

Schedule No. 362.

Class 72. One universal back geared milling machine—Bidder 8, $1697.50; 15, $1679; 56, $1732; 89, $1700.

Schedule No. 381.

Class 153. Twelve vertical single boiler feed pumps for steam launches—Bidder 7, $628.20; 26, $600; 37, $588; 110, $659.52.

The following awards have been made fur supplies for the navy yards, bids for which were opened February 20:

Hallidie Machinery Company, Seattle, Wash., class 23, one cornice brake, $231.

J. Edward Ogden Company, New York, class 61, one hand power single I-beam traveling crane, $333.

Niles-Bement-Pond Company, New York, class 71, one engine lathe, $750.

Pratt & Whitney Company, Hartford, Conn., class 72, one tool makers' lathe, $592.

J. A. Fay & Egan Company, New York, class 73, one improved jointer and facing machine, $340.

Northern Electrical Mfg. Company, Madison, Wis., class 74, one motor driven grinding and polishing machine, $260.

Becker-Brainard Milling Machine Company, Hyde Park, Mass., class 75, one No. 2 universal milling machine, $1112.

Oliver Machinery Company, Grand Rapids, Mich., class 76, one band sawing machine, $724.

American Ship Windlass Company, Providence, R. I., class 88, two steam winches, $1730.

Under bids opened February 27 for supplies for the navy yards Allan Bruce Blakemore, New Orleans, La., has been awarded class 15, two duplex stetam pumps, $358.

Bessemer Steel in Great Britain in 1905.

Statistics just published by the British Iron Trade Association show that the output of Bessemer steel ingots in the United Kingdom in 1905 was 2,009,712 tons, as compared with 1,781,533 tons in 1904, 1,910,018 tons in 1903 and 1,825,779 tons in 1902.

The output of acid Bessemer ingots in 1905 was 1,117,731 tons, or 11,493 tons less than in 1904, while the output of basic Bessemer ingots showed an important increase, being 891,981 tons, as against 652,309 tons in 1904 and 593,103 tons in 1903. The total output of Bessemer steel by districts is shown in the table below, with the distribution of basic and acid ingots:

District.	Acid ingots. Gross tons.	Basic ingots. Gross tons.	Totals. Gross tons.
South Wales	425,155	35,502	460,657
Cleveland	113,108	260,072	373,180
Sheffield, &c.	276,850	91,555	368,405
Cumberland and Lancashire	302,618	278,502	581,120
Staffordshire, Scotland, &c.	.....	226,350	226,350
Totals	1,117,731	891,981	2,009,712
Totals, 1904	1,129,224	652,309	1,781,533
Totals, 1903	1,316,915	593,103	1,910,018

The British output of Bessemer steel rails in 1905 was 951,552 tons, as compared with 916,374 tons in 1904, 1,061,441 tons in 1903 and 903,216 in 1902. The output of open hearth rails in 1905, which has already been published, was 108,953 tons. The following table gives the output of semifinished and finished Bessemer steel for which returns were received for 1905:

	Gross tons.
Rails	951,552
Bars	288,980
Blooms and billets	286,082
General merchant steel	187,973
Total	1,714,587

The number of Bessemer converters in operation in the United Kingdom in 1905 was 60, while 16 were idle, 7 of the 16 being in South Wales. The total number of works engaged in the manufacture of Bessemer steel in 1905 was 19, of which 7 produced between 100,000 and 200,000 tons each, while only 1 produced over 200,000 tons.

The London *Iron and Coal Trades Review*, commenting on the Bessemer steel statistics for 1905, says: "The idea that the Bessemer steel industry is likely to be wholly superseded by that of the open hearth is certainly not encouraged by the recent records of the two processes. It is true that in our own country the quantity of steel produced by the open hearth process was nearly twice the quantity produced by the Bessemer process, and it is also true that in the United States, where the Bessemer process was in almost exclusive possession of the field until ten years ago, the make of open hearth steel ingots in 1904 was 43 per cent. of the combined make of the two processes. But, on the other hand, our own production of Bessemer steel in 1905 has been greater than that of any year since 1890; greater indeed than that of any year in the history of the trade, excepting only each of the four years ended with 1890, from which point the open hearth process took its large and rapid rise. Nor must it be overlooked that in 1905 the United States increased its previous year's output of Bessemer steel by the colossal figure of 3,082,000 tons, a figure which is not at all likely to have been approached by the gain of open hearth steel for the same year, and that the total output of Bessemer steel in the three principal countries will in 1905 have been about 19,500,000 tons, of which 13,000,000 tons have been ascertained, and 6,500,000 tons are assumed to have been the output of Germany, being 550,000 tons in excess of the output of the previous year."

The Pennsylvania Railroad Pension Department in six years has authorized in pension allowances to retired employees of the company $2,004,087.59, as follows: 1905, $390,000; 1904, $390,000; 1903, $359,374.32; 1902, $328,403.10; 1901, $292,290.20 and 1900, $244,019.97. In the six years 2700 employees have been retired as pensioners, of which number 890 have died. Of the total number retired, 688 were between 65 and 69 years and 546 were retired on their own request.

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HARDWARE

ONE of the most interesting and important phenomena in the Hardware business has been the steady and constant decline in value of all Hardware items during the past half century. Although there have been bursts of high prices during boom periods or because of artificial restrictions, yet, on the whole, the trend has been steadily downward. Two causes have worked to produce this effect—the discoveries of enormous bodies of ore, thus rendering raw material much cheaper, and the multiplication and greater efficiency of machinery, thus greatly decreasing the cost of finished articles.

The result has been that all dealers in Hardware, from manufacturers to retailers, have been confronted by a serious problem. It has needed the greatest ingenuity and exceptional enterprise to overcome the difficulties brought about by this condition, since, with the constant cheapening of all products, it has become necessary to do a great deal more in the way of tonnage in order to equal the same volume in dollars and cents, while, on the other hand, the cost of doing business has increased rather than decreased. In many instances—in fact, in most cases—nearly twice as much tonnage must be handled now as 50 years ago to reach the same amount in value, and yet it costs more actually, though not proportionately, to do this increased volume of business. The solution of the problem therefore was to increase the volume of business to the extent where it could be done economically, on the basis of an expense account that was largely of a fixed nature.

This is one reason why Hardware has expanded far beyond its original limits and now embraces so many lines that once formed separate and distinct pursuits in themselves. The volume of business must be had if success was to be attained, so the field of legitimate Hardware was found too small to meet the demand and other territories were invaded and occupied.

There are, however, signs that the pendulum has perhaps reached its farthest limit and may swing in the other direction. As recently stated in these columns, the question of the necessary supply of raw material is becoming of more than academic interest, and the trend of ore prices for the time seems to be upward. Beyond this lies a problem that is world wide in its significance and effect and whose far-reaching results can only be conjectured at present, and that is the steadily increasing supply of gold. As this precious metal is the world's standard, it follows if its production increases beyond commercial and financial needs for it as currency or the basis for currency that there can be but one result, and that a falling in the value of gold itself as a purchasing power, which can only be shown in one way, since gold is the standard—the rise in the value of those things which it buys. Unlike the useful metals, the discoveries of new bodies of precious metals seem to be proceeding faster than even the actual demand, so that the possible scarcity of the useful metals, on one hand, and the growing supply of gold, on the other hand, promise to change and possibly, for a time at least, arrest that downward trend in prices which has been so marked for so many years and which finds so many striking illustrations in the Hardware market.

This decline in values and the consequent increasing difficulties of business and this menace to trade would have been far more serious in its effects if it had not been for two great compensations. One is the extraordinary multiplication of articles and commodities of all kinds which have found their place in the market and have moved steadily and with growing volume through the channels of trade. Those who are living in these days can hardly realize the change which has come over the character of the manufactured products which are regularly bought and sold and the extent to which they are multiplied in number and variety. With the decreasing price there has been more than a proportionate increase in the variety and volume of the goods which are going into consumption. This has served as a constant and most potent factor in preventing the stagnation and loss which would have been inevitable if with a declining market there had been no increase in tonnage or in the variety of articles which are the subject matter of commerce.

Another influence, in spite of a market in which prices have been gradually lowering, has been the prevalence of general prosperity and the great amount of money which has been in circulation. This fact, with the progress of civilization along material lines, the desire on the part of the people to enjoy increasingly the luxuries of life, and the effort on the part of those who are engaged in industry and enterprise in general to develop and push them to the most successful results, has with other influences conspired to make a great volume of business, which to those who are in a position to avail themselves of its benefits yields larger profits than the simpler conditions of a generation or two ago, with higher prices, fewer commodities and a narrower market.

Condition of Trade.

Most manufacturers report business in heavy volume, some of them finding that March, like January and February, is bettering the record of any previous year. There is not, however, entire uniformity in this experience, as in certain lines there is a less urgent demand, presumably because the trade have already purchased liberally for the season's supply. Prices are without material change. As a rule they are very firm, a few lines being weak as the result of the breaking up of combinations or other artificial means of sustaining the market, or in consequence of some special conditions applying to the lines in question. Many kinds of goods are feeling the effect of the higher prices for lumber, an influence which will probably have for years to come increasing effect on the prices of goods into which wood enters. The trade fortunately is comparatively free from labor disturbances or disquietude, but the manufacturers' costs have been materially increased because of the gradual advances which from time to time have been made in wages during the past few years. The increasing cost of doing business is also a factor which impresses itself in the manufacturing plants, as well as in the stores of the merchants throughout the country.

Chicago.

Jobbers report no diminution of orders from the retail trade, notwithstanding the heavy buying that prevailed throughout the month of February, and with several large jobbers the volume of business thus far this month is greatly in excess of February's record. Nor is the

demand limited entirely to seasonable goods, but includes staple lines as well. The open weather that has prevailed throughout the West and Northwest has been of tremendous benefit to the Hardware trade in general, permitting outside work to be carried on almost continuously. There has been some falling off in the orders that are being placed with the manufacturers, this being true not only of Wire products but all of the heavier lines, while contracts for staple goods were largely closed before the first of the year. Nevertheless specifications are coming forward in good volume and deliveries generally are from two to three months behind. The heavy trade throughout the winter months in Mechanics' Tools, especially those used by Carpenters, has depleted jobbers' stocks, and much difficulty is being experienced in securing prompt deliveries from the manufacturers. This includes Bits, Saws, Hammers, Chisels, &c. The enforcement of the wide tire ordinance, which has been under consideration by the Chicago City Council for some time, will necessitate the expenditure of a large amount of money in refitting wagons, and in many cases will result in their replacement entirely. It is estimated that upward of 40,000 vehicles will be affected and at least a year will be required to make the necessary changes in tires, wheels and wagon boxes, and in many cases new axles will also be required. The present shortage of wood stock is a question which requires serious attention in the enforcement of an ordinance of this kind, and jobbers in this material assert that at least 12 months will be required to secure the necessary material to make all of the changes. In the Northwest this material is growing exceedingly scarce and one large wagon manufacturer has already decided to erect a plant in Missouri where timber is more plentiful, and others are securing acreage in the low lands along the Mississippi to replace tneir depleted forests, upon which they depended in the past. At a meeting of the National Association of Wagon Manufacturers, held here last week, the question of advancing prices was seriously considered on account of the big advances in the cost of raw material, but no action was taken, although there is a probability that something along this line will be done in the near future. Blacksmiths' supplies continue to move freely and the consumption during the winter months was not materially affected, despite the unseasonable weather. Large contracts are pending for Builders' Hardware, the largest of which covers the entire equipment for the new county building and which has not yet been let, although bids have been under consideration for several weeks. The contract for furnishing the new Commercial Bank Building was awarded to P. &. F. Corbin and covers solid bronze and iron fittings. In St. Louis, where five large office buildings are under erection at the present time, three contracts for Builders' Hardware are under consideration.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—Business is moving along in a very satisfactory manner, although with a little more deliberation than was shown in the last two months of the past year.

The Axe situation has only helped to verify the old saying that the exception proves the rule. The general trend of values has been and is upward, so that Axes are now below their supposed actual value. The present condition brings forcibly to mind the value of old, well established private brands, as it was on this line of merchandise that private brands were first introduced, and we feel we can claim that our house were pioneers in this line, having established and sold the "Red Chieftain" brand of Single Bit Axe in 1863. We may be mistaken, but know of no other brand that has been continuously on the market since that date.

Perhaps nothing shows the phenomenally mild winter more clearly than the enormous amount of outdoor work which has been contracted for during February. In a *résumé* of the building permits issued in 33 cities during February Philadelphia is credited with 1271 operations, almost double those of Los Angeles and Brooklyn, her nearest competitors. This is more than double the permits issued last February both in number and value.

Baltimore.

CARLIN & FULTON.—Trade still continues active, being stimulated by the favorable weather which has prevailed throughout the whole winter. There has been but little interruption to outdoor work of any kind, and shipment of goods has continued uninterruptedly. From all that we can hear the demand has been great in all sections of the country and has resulted in a very strong market for many lines of goods, especially those in which copper, lead and leather are component parts.

Our own municipality desiring to issue loans for several millions of dollars to be expended in paving, schoolhouses, engine houses and other improvements is compelled to go to the Legislature for authority to borrow the money. The bill will undoubtedly be passed, but unfortunately a bill has already been introduced limiting the employment of labor on municipal work to the registered voters of our city, which bill is opposed by nearly every commercial organization in this city as being a tendency toward a trust in the labor market. We hope that wise counsels will prevail and that the desire to furnish employment to our own citizens will not interfere with the desirability of making the contracts at the least possible cost, and perhaps defeating the very objects of the bill. We have in contemplation the expenditure of a great many millions of dollars right in our own city, though the work will not be of such a nature that there will be any great demand for manufactured Hardware. When our improvements are completed we will have a city of which we can well be proud.

Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY.—The business situation brightens considerably as spring weather approaches nearer. All indications point to an excellent demand for goods through the spring and summer months. A very large amount of building is projected as well as in progress throughout the entire territory tributary to this market, and this condition represents the status of trade covering the entire trans-Missouri region. Labor of all kinds can find ready employment at good wages. The whole country west of the Missouri River may be reported as continuing in a very prosperous condition, and as long as there is plenty of business in sight, backed by favorable climatic as well as financial conditions, the volume of trade for the next few months at least will be something immense. The market reflects strength throughout, especially in certain lines, and this fact alone lends encouragement as well as confidence to general operations.

St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—Gladstone once said he always felt sorry for clerks because they had to be so "dem'd civil." Ministers' sons are proverbially bad boys. "Beware of the wrath of the patient man." Is not all this simply the law of action and reaction?

A customer once dropped in just about closing time and I called a salesman and asked him to entertain him that evening. The salesman took him to the front door and then returned, and asked me whether the customer was religious or sportily inclined. I answered, "He is very religious." "Then I will telephone my wife I will be out all night," replied the salesman.

Once I leaned out of the window of a Pullman car at Glenwood Springs, Col., and said to a brawny chested section hand who was resting on his Shovel: "Pat, is the work hard?" Glancing up, he answered: "The work is aisy enough, but what I don't like is the dam'd regularity of it."

All of us get tired of the same old thing.

This week a white haired merchant came to my office. He was in the market for a new stock. I was tired of being so "dem'd civil." The merchant glared at me from under his shaggy eyebrows, and asked:

"How many rules have ye got for selling goods?" "Only one."

"Must I buy all my bill from ye?" "Just take what you please," said I, indifferently, glancing over a letter on my desk.

"Are your special brands the very best in the world?" "Not that I know of," said I, as I signed a check.

"If I buy all your special brands from ye will ye sell me manufacturers' brands at cost?" "Well, I guess not," I answered, as I cut open a letter.

"Suppose I buy all the staple stuff from ye and get all the special brands from your competitors." "That will be all right with us," said I, "just so you follow our rule."

"What the devil is the rule?" asked he. "That you will leave enough goods in our store to take care of the rest of our trade."

"Call your salesman," said he. "I like your rule. Don't ever have two rules. Don't give too much advice. Don't tell a man who is old enough to be your father how to run a country retail store when ye never ran one in your life. Don't tell a retail dealer how much you are doing to help him sell goods. It just gets sickening. Where is your sample room?"

Trade the first week in March has slacked up a bit.

Cleveland.

THE W. BINGHAM COMPANY.—One would think from the reports we hear of advanced prices on many kinds of goods that it would affect the cost of living very materially, but it does not seem to have operated much that way. It is true that some articles have advanced in price. We noticed an advertisement in one of the daily papers from a retail grocery house, quoting prices on some leading staples. It would seem from this that we are better off, as far as groceries are concerned, than we were a year ago. They compare prices 1905 and 1906 as follows:

	1905.	1906.
10 pounds granulated sugar	$0.70	$0.55
1 sack C. & R. Gold Dust flour	1.72	1.35
2 pounds Club House creamery butter	.80	.68
2 dozen poultry farm eggs	.80	.40
Totals	$4.02	$2.98

This shows a large saving, not on luxuries, but on some of the most staple articles in use in every home.

Now, this same low tendency of prices is also true in the Hardware line, although there have been a few advances in some lines, but they do not amount to very much. The greatest advance in anything in this country has been in labor—not so much in the commodities. Take house trimmings, such as bronze plated, bronze metal, brass and cast goods and wrought iron goods, viz., Locks, Latches, Knobs, Door Bolts, Sash Fasteners, Cupboard Catches, Butts and Hinges—in fact, all kinds of house trimmings are cheap at the present time. A person can trim a house with fine and beautiful designs of Hardware, made of good metal, for very little money. Most advances in building have been in the line of material, such as lumber, brick, stone and plaster.

There is room for a decided change and a large advance in some lines of goods. Take the line of Shovels, Spades and Scoops—they are too low, if the present cost of material and labor is to be considered. All kinds of Screws, Strap and T Hinges are very low in price. Axes and all kinds of carpenters' tools are cheap. Sash Cord and other cotton goods are a little higher, on account of the advance in the price of raw cotton.

Large quantities of spring goods are going forward to customers. Those who have not yet purchased will regret it later on, we think. Many goods will be hard to get promptly in the near future. We are now getting a lot of business on Wire Cloth and Poultry Netting that we should have had a month ago. It is coming from sections of country where jobbers were fighting about the price, and some quoted lower prices than they should have named, and they are now very slow in filling orders; some customers have undoubtedly cancelled their orders and now are looking for jobbers who can and will supply them promptly. Cleveland jobbers are in a position to do this very easily.

The five Hardware jobbing houses here carry the largest and most varied lines of Hardware in mining, milling, manufacturing, builders' and house furnishing supplies of any city in the United States. Their business is strictly Hardware—they do not carry in stock clocks, jewelry, glass ware, clothing or furniture.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—Conditions on the Pacific Coast cannot be better shown this week than by referring to last week's clearings (they speak volumes): San Francisco, 20 per cent. increase; Los Angeles, 42 per cent.; Portland, 57 per cent.; Seattle, 125 per cent.; Tacoma, 41 per cent., and Spokane, 45 per cent. No section of the United States can match this showing. Portland's large increase is to be compared with an increase in 1905, incident to construction and pay rolls in connection with the Lewis & Clark Exposition. Now that spring is with us in fact, railroad construction will be more vigorously pushed, tending to increase pay rolls and improving market for produce to maintain the armies of men so employed.

There are now in port, under charter for China, Japan, Australia, South America and Europe, sail and steam vessels, of capacity to carry 20,000,000 feet of lumber, and for coast ports, 5,000,000 feet; and under charter to arrive for foreign ports, 19,000,000 feet, and coastwise, 6,000,000 feet, making Portland the greatest lumber port in the world.

There is no complaint to register regarding trade in the Pacific Northwest, and prospects continue as bright as heretofore reported.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—Spring trade continues enormous. Nashville jobbers and, so far as we can learn, all Hardware jobbers in the South, have more than they can do and are working at night in the shipping and billing departments. Most all houses are from two to three days behind in filling orders at present. March will probably be the largest month in the history of the Hardware trade in the South. The movement of all spring and summer goods is particularly heavy. There has been the biggest trade on steel goods and garden tools ever known. The volume of business in harness and leather goods has also broken all records, notwithstanding the high prices on these lines, owing to the high price of leather. Some orders are also now being taken for fall shipments of Axes, Cutlery and Guns.

From all reports that we have received there is going to be an increased acreage of cotton planted this spring. Planters have bought heavily of all farming tools and implements this year. Prices are being well maintained and collections are good.

NOTES ON PRICES.

Wire Nails.—While new business is comparatively light the mills are fully engaged in filling specifications on contract orders. This in many instances taxes the shipping capacity of the mills. Prices are firm and quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads to jobbers	$1.85
Carload lots to retail merchants	1.90

New York.—Demand for small lots from store is moderate. As far as can be learned jobbers' prices are being maintained. This is somewhat unusual when business is light. Small lots from store are quoted on the basis of $2.15 per keg.

Chicago.—New business continues comparatively light, as large distributers are principally interested in securing deliveries on heavy contracts placed earlier in the year. Jobbers continue to report that merchants are anticipating shipments and stocks generally are very low. Specifications on existing contracts are exceedingly heavy and are still in excess of shipments, and deliveries are being further deferred from time to time. On the present basis there is no difficulty in maintaining prices and no shading whatever is reported. As to an advance, no action has yet been taken, and it is extremely doubtful if there will be any change this month. We make the following quotations: $2 in car lots to jobbers and $2.05 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—While new demand for Wire Nails is only fair the mills are still very busily engaged in filling old contracts, specifications on which continue to come in very freely. The mills are still behind on deliveries, and it is expected that as soon as spring opens stocks of Wire Nails now held by the jobbers will move out very freely. Some of the mills that are paying high prices for steel and also for Wire Rods favor an advance in Wire Nails, but this is opposed by some of the larger interests that are self-contained, making their own steel and rods and believe that present prices of Wire Nails are amply high. The market continues very firm and we quote: Wire Nails, $1.85 in carloads to the large jobbing trade and $1.90 in carloads to retail merchants, f.o.b. Pittsburgh, plus actual freight to point of delivery, terms 60 days, less 2 per cent. off for cash in 10 days.

Cut Nails.—Specifications on contract orders exceed new business in volume. In fact current orders are light. Quotations are as follows: $1.80, base, for carload lots, f.o.b. Pittsburgh; $1.85 for less than carloads, f.o.b. Pittsburgh; $1.95 for carload lots, on dock, New York; $2 for less than carloads, on dock, New York. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 5 to 10 cents advance on Steel Cut Nails.

New York.—Demand is light and the call small for small lots from store. The prices recently made by the local jobbers, however, are being maintained, as far as can be learned. Quotations are on the basis of $2.05 per keg.

Chicago.—While the mills report new business very light, specifications on existing contracts are much above the normal at this season, and it is doubtful if large jobbers and heavy consumers will give new orders for forward delivery until those already contracted for are delivered. Quotations continue to be well maintained, as follows: Steel Cut Nails in car lots, $1.95; less than car lots, $2; Iron Cut Nails, $2.05 in car lots; less than car lots, $2.10.

Pittsburgh.—New business in Cut Nails is light, but the mills have a good many contracts on their books on which buyers are specifying liberally. Prices are well maintained, as follows: $1.80, base, for carload lots, f.o.b. Pittsburgh; $1.85 for less than carloads, f.o.b. Pittsburgh; $1.95 for carload lots, on dock, New York; $2 for less than carloads, on dock, New York. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 5 to 10 cents advance on Steel Cut Nails.

Barb Wire.—Conditions similar to those which prevail in the Nail market are found in connection with Barb Wire, as specifications on contract orders are much larger in volume than new business. Prices are alluded to as being firm. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots	$2.00	$2.30
Retailers, carload lots	2.05	2.35
Retailers, less than carload lots	2.15	2.45

Chicago.—Specifications are exceedingly heavy and practically no stocks have been accumulated by either the mills or the jobbers. Woven fencing likewise is being specified for very freely and the distribution is exceedingly heavy throughout the West, where much outdoor work is already under way. Quotations are well maintained as follows: To jobbers, Chicago, car lots, Painted, $2.15; Galvanized, $2.45. To retailers, car lots, Painted, $2.20; Galvanized, $2.50. Retailers, less than car lots, Painted, $2.30; Galvanized, $2.60. Staples, Bright, in car lots to jobbers, $2.10; Galvanized, $2.40; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—Shipments by the mills on old contracts continue heavy, but new business is very light. It is said that stocks held by jobbers are not very heavy, and these are expected to move out freely as soon as spring trade opens, which will be before very long. The market is firm but unchanged, as follows: Painted Barb Wire, $2, and Galvanized, $2.30, in carload lots to the large jobbing trade, with the usual advance of $1 a ton to retailers in carload lots, f.o.b. Pittsburgh, 60 days, or 2 per cent. off for cash in 10 days.

Smooth Fence Wire.—Current demand in the way of new orders is light, as heavy contract orders were placed earlier in the season. Specifications on these orders are being received in such volume that mills are behind deliveries. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads	$1.70
Retailers, carloads	1.75

The foregoing prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12&12½	13	14	15	16
Annealed	Base	$0.05	.10	.15	.25	.35	.45	.55
Galvanized	$0.30	.35	.40	.45	.55	.65	1.05	1.15

Chicago.—The movement of bale ties has already commenced and the season promises to be a very heavy one. The mills have not been able to accumulate as large a stock as in former seasons on account of the heavy demand for other lines, and jobbers generally are carrying only small supplies. The demand for Telephone Wire is also improving and the season will be at its hight within a few weeks. Present indications point to a big season and the mills are anticipating a larger consumption than in previous years. Fence manufacturers continue to specify freely and while new tonnage is light the contracts on the books of manufacturers against which shipments are made insure operations for the next 60 to 90 days. Quotations are firm and unchanged, as follows: To jobbers, $1.85, f.o.b. Chicago, in car lots, and car lots to retailers, $1.90.

Pittsburgh.—Specifications on contracts continue to come in to the mills very freely, and while their shipments are heavy they are still behind in deliveries. Demand for Fence Wire is expected to be heavy just as soon as the weather permits the roads to become passable. The market is quite firm, but there are no official intimations of any advance in prices. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent discount for cash in 10 days:

Jobbers, carloads	$1.70
Retailers, carloads	1.75

The above prices are for base numbers, 6 to 9.

Axes.—Manufacturers of Axes are maintaining with considerable unanimity the low prices announced March 1. It is reported that considerable business is being booked, although much of this under a guaranty against declines. Jobbers apparently incline to the belief that little is to be gained by delay, as the circumstances preceding and following the disruption of the association have been such as to bring prices about as close to cost as even the strongest and best equipped producers could comfortably go. Orders taken on this level can therefore be filled only at considerable hardship by the smaller manufacturers. With the dissolution of the association the arrangements which were enforced for regulating prices to the various classes in the trade have been abandoned, and the market is entirely open to all classes of buyers. There is thus no longer a classified list of jobbing houses or provision for rebates, and manufacturers are entirely free to make such quotations as they please to the houses, large or small. As a result of this condition, especially with the very active competition for trade, there is much unevenness in the quotations made to retail merchants, and in many cases those whose orders are desirable are able to place them at prices closely approximating those made to jobbers. The fact that the extreme prices at which Axes are selling are exceedingly low induces some manufacturers to go direct to the retail merchants, to whom they are glad to make attractive prices, though slightly higher than the figures at which it is necessary for them to book the jobbers' orders. The fact, too, that retail merchants are more ready than the jobbers to purchase manufacturers' brands makes it desirable from the standpoint of the manufacturers to market their goods increasingly through retail channels. In a general way the price to retail merchants may be named as $5 per dozen for the base sizes of Single Bit Axes, a figure which would leave the jobbing trade about the same margin of profit as when the combination was enforced. This figure is, however, frequently shaded 25

cents or even more on good orders from representative retail houses.

Sheet Metal Ware.—It is reported that manufacturers of Galvanized Ware, Stamped Ware, &c., have recently held a meeting in the South with a view to effecting some understanding regarding prices. The attempt was unsuccessful. It may therefore be assumed that no improvement in the market as a result of concerted action between the manufacturers is to be expected in the near future. Business is in fair volume, although claimed to be unremunerative for the producers on many lines.

Wire Cloth.—Reports from various quarters would indicate a rather exceptional demand for Screen Wire Cloth, due undoubtedly to the open winter and expectations of an early spring. Higher prices for Door and Window Screens, resulting from the increased cost of lumber and the recent combination of manufacturers, are also a factor in the situation, tending to increase the consumption of Wire Cloth for covering old frames. It is stated that jobbers are taking unusually large orders and the productive facilities of manufacturers of standard brands of Cloth are being tested to the utmost. Such developments come as a surprise to many in view of the low prices which have recently prevailed.

Registers.—Representatives of the Register manufacturers have been meeting the past week in a Southern city and as yet no report of their action has been received. It is believed, however, by those best informed as to the situation that no material changes will be made. An excellent volume of business for this season of the year is reported.

Asbestos Packing.—The associated interests controlling manufactured Asbestos products on February 26 advanced the prices on Asbestos Packing, Wick and Rope 2 cents per pound to 17 cents per pound for 500 pounds or over and 22 cents per pound for less than 500-pound lots. The reason for the advance given by the manufacturers is the largely increased demand for this class of Asbestos Material, which it is said has necessitated diverting labor from the production of Asbestos Mill Board, Paper, &c., to increase the output of Packing. No changes, so far, have been made in other Asbestos materials.

Building Papers.—The market for Building Papers, such as Roofing Felts, Rosin Sized Sheathing and Deafening Felts shows no marked changes, the product now being largely controlled by the same interests that have dominated it for years. The following prices obtain in New York and adjacent Eastern territory, those for the West and South being much the same plus freight, according to the location of the numerous factories producing the goods and delivery points: Tarred Felt, single ply, is $32.50 per ton, and in carloads, $31; two-ply, 40-pound rolls, 55 cents; three-ply, 60-pound rolls, 75 cents, both being quoted at 50 and 70 cents per roll each, respectively, in car lots. Rosin Sized Sheathing is $32 per ton; Deafening Felt, 9 and 6 square feet to the pound, $48 per ton, and 4½ square feet to pound, $50 per ton. The price for Deafening Felt remains high, owing to a continued scarcity of rag stock from which it is made. Slaters' Felt, 500 square feet to tne roll, is 70 cents per roll.

Binder Twine.—The International Harvester Company has announced the following prices on Binder Twine, which are the first it has made known for the coming season:

	Per lb.
Sisal or Standard	10c.
Standard Manila	11c.
Manila	12c.
Pure Manila	13c.

These quotations are f.o.b. Chicago, Milwaukee, St. Louis and other central points. There is a discount of ⅛ cent for lots of 10,000 pounds or ¼ cent per pound for carloads. Rates for Minneapolis, Kansas City and other Western points similarly situated are ¼ cent higher. It is understood that Milwaukee and St. Louis jobbers, who handle Plymouth Twine, are quoting the following prices:

	Per lb.
Sisal and Standard	10c.
M grade, 550-foot, Mixed Twine	11c.
L grade, 600-foot, Twine	12¼c.
Pure Manila, 650-foot	13¼c.

These prices are for central delivery, with the same discounts for quantity as named by the Harvester Company. It is reported that the Hooven & Allison Company, Xenia, Ohio, quotes Sisal and Standard Twine at 9¾ cents per pound, with Standard Manila, Manila and Pure Manila at the customary advances over Sisal. The same discounts for quantity apply, as named by the two concerns already noted. The quotation made in the West by the Ludlow Manufacturing Associates is said to be 9¾ cents for Sisal and Standard. The Peoria Cordage Company quotes the same price on Sisal and Standard and 10¾ cents on Standard Manila. The quotations of both of these concerns are subject to the before-named discounts for quantity.

Rope.—While demand is in excess of last month it is moderate, and manufacturers could supply an increased quantity of Rope without difficulty. Prices are fairly well maintained. Quotations are as follows: Pure Manila, 12½ cents; B quality, 11½ cents; Pure Sisal, 9½ cents; No. 2 quality, 8 cents per pound.

Window Glass.—It is reported that the American Window Glass Company has advanced its price to 90 and 10 and 5 per cent. discount on all sizes except 16 x 20 and greenhouse Glass, for which higher prices are quoted. Some of the hand blow Glass manufacturers have become stiffer in their prices, owing to the good demand and the prospective scarcity of Glass. At this point demand is light, but from the territory tributary to this city business has been good. New York quotations are as follows: First two brackets, single, 90 and 20 per cent. discount; all other sizes, single and double thick, 90 and 15 to 90 and 10 and 5 per cent. discount.

Linseed Oil.—Demand is light, which is in strong contrast to the amount of business done earlier in the winter. Seed is coming into the market in large volume and the price of cake is somewhat stronger. Under these conditions the Oil market is somewhat weak, especially on out of town Oil, which has been sold during the week at from 39 to 40 cents per gallon, in any quantity. City Raw continues to be quoted at the unchanged price of 44 to 45 cents per gallon, with Boiled Oil 1 to 2 cents advanced over Raw.

Spirits Turpentine.—Light receipts and small stocks at Savannah has caused the market to advance during the week under review. Demand has been light, both in the South and at this point, while the market has been strong. New York quotations are as follows, according to quantity: Oil Barrels, 73 to 73½ cents; Machine Made Barrels, 73½ to 74 cents per gallon.

DEATH OF FRANK S. COWLES.

FRANK S. COWLES, president of the Norwalk Lock Company, died at his home in Norwalk, Conn., Friday, March 9, after a lingering illness, following an attack of pneumonia a year ago. Mr. Cowles was born 43 years ago in Belchertown, Mass., where he received his education. When a young man he obtained employment in the Boston office of the Norwalk Lock Company, where he quickly developed qualities fitting him for the Hardware business. He was transferred to the factory in South Norwalk in 1886 in order to thoroughly familiarize himself with the details of the manufacture of Builders' Hardware. Later he represented the company in the selling branch of the business throughout the New England States, making his headquarters in Boston. In 1896 he assumed charge of the New York office as manager, which position he retained until he was elected president of the company, in 1903.

Mr. Cowles was an experienced and thorough Hardwareman and had been deeply interested in the affairs of the company during the 25 years of his connection with it, refusing, the company's officials say, many flattering offers to identify himself with other interests. His genial disposition and straightforward ways won him many

friends in business and social circles who will cherish his memory. Mr. Cowles is survived by a widow.

DEATH OF EDWIN GILBERT.

EDWIN GILBERT, president of the Gilbert & Bennett Mfg. Company, Georgetown, Conn., and Chicago, died at his Southern winter home in Crescent City, Fla., where he had been going for 23 years past, February 28, in his eighty-fourth year. Mr. Gilbert went South a little more than a month ago in good spirits and apparently in his customary good health.

Edwin Gilbert was born in Georgetown, Conn., in September, 1822, and for many years worked in the factory at the business established in 1818 by Benjamin Gilbert, his father, Edwin becoming a member of the firm, which was originally Gilbert, Bennett & Co., in 1844. The business under the present title was incorporated about 1873, and in 1884 Edwin Gilbert was elected president of the company, an office he filled with great ability until his death, although for the past six or seven years he had refrained from handling other than the

EDWIN GILBERT.

more important questions incidental to the office, the active management devolving on his associates, many of whom have grown up with the company in periods extending up to half a century.

The business originally was the making of curled hair, glue and Sieves, and was started by his father in the cellar of his home, where later Edwin at the age of six years used to turn a crank to the limit of his strength in the process of making Rope from hair. Later the manufacture of Wire Cloth was undertaken, and it is said it was in that factory that the first piece of Painted Wire Cloth was made, the first bale of Poultry Netting manufactured by power and the first piece of Galvanized Wire Cloth produced. About 1873 there was a destructive fire that greatly crippled the company, mechanically and financially, and in the rebuilding processes it was determined to cease the making of glue and curled hair and confine their energies to Wire Goods.

Mr. Gilbert was always progressive, and up to his decease is said to have had as keen appreciation for any improvement of benefit to the business as any man in the prime of life. He was very domestic in habits, exceedingly hospitable, intensely religious, and throughout his life always doing charitable work among the deserving, but giving only after personal investigation and on intelligent lines, a characteristic that was perpetuated in his will in which over $250,000 is given to various worthy institutions. He was always more or less associated with younger people, keeping in touch with them, and he possessed marked ability in the selection of capable men for various positions. He had sterling qualities of heart and mind and an untiring zeal. In addition to $60,000 and the "Model Farm," given to the Connecticut Agricultural College, are bequests to Northfield Seminary, Northfield, Mass.; Mount Hermon School, Mount Hermon, Mass.; Georgetown Public Schools; Life's Farm at Branchville; for care of worthy poor of Georgetown; Tuskegee Institute, Tuskegee, Ala.; Southfield Conference, Crescent City, Fla.; Atlanta University, Atlanta, Ga.; Home Missionary Society of Connecticut; American Board of Foreign Missions; Danbury Hospital. Churches in Georgetown, Redding and Wilton, Conn., were also remembered by him in his will. All of these bequests become effective on the death of Mrs. Gilbert.

The "Model Farm" alluded to is known as "Life's Farm," which is maintained by the Life Fresh Air Fund, to which he was a contributor, giving to Storrs Agricultural College, Branchville, near Willimantic, Conn., 350 acres, buildings and stock besides the $60,000 mentioned, the institution entertaining as many poor children as 200 to 300 at a time. Mr. Gilbert nine years ago celebrated his golden wedding. His widow, a few years his junior, survives him, but he left no children.

PENNSYLVANIA WHOLESALE HARDWARE AND SUPPLY ASSOCIATION.

THE Pennsylvania Wholesale Hardware and Supply Association held its annual convention at the Hotel Astor, New York City, on the 7th and 8th inst. The meeting was the best attended in the history of the association. Two firms were added to the membership. The meeting was called to order by President H. L. Raub of Lancaster, Pa., after which officers were elected for the ensuing year, as follows:

PRESIDENT, A. W. Lewis, Phelps, Lewis & Bennett Company, Wilkes-Barre, Pa.
FIRST VICE-PRESIDENT, A. B. Stein, Stichter Hardware Company, Reading, Pa.
SECOND VICE-PRESIDENT, Geo. Small, P. A. & S. Small, York, Pa.
SECRETARY, John Waeldin, Canton, Pa.
TREASURER, Geo. D. Krause, Geo. Krause Hardware Company, Lebanon, Pa.

EXECUTIVE COMMITTEE.

W. H. Conyngham, chairman, Pennsylvania Supply Company, Wilkes-Barre, Pa.
F. W. Bleckley, Hazleton Machinery & Supply Company, Hazleton, Pa.
W. E. Bittenbender, Bittenbender & Co., Scranton, Pa.
J. N. Kline, Kline & Co., Williamsport, Pa.
John H. Obold, John H. Obold & Co., Reading, Pa.

Interesting and valuable papers were read by R. M. Reilly of Reilly Bros. & Raub, Lancaster, on "The Civilizing Influence of Trade"; by J. N. Kline of Kline & Co., Williamsport, on "Parcels Post," and by F. A. Phelps of Phelps, Lewis & Bennett, Wilkes-Barre. Addresses were also made by T. James Fernley, secretary-treasurer of the National Hardware Association, on "Association Work," and by R. R. Williams, Hardware editor of *The Iron Age*, on "The Golden Rule in Business."

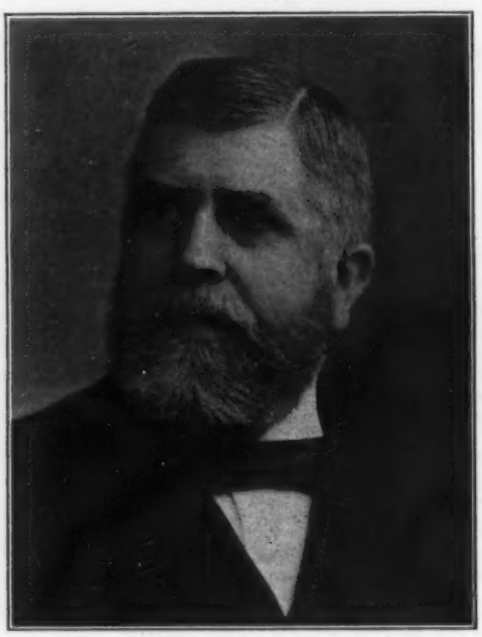
The new houses elected to membership were Herr & Snavely of Lancaster and C. H. Miller Hardware Company of Huntingdon, making the present membership of the association as follows:

ASHLAND.
Peter E. Buck & Sons.
DANVILLE.
Welliver Hardware Co.
EASTON.
Thomas T. Miller Hardware Co.
HAZLETON.
Hazleton Machinery & Supply Co.
Bright & Co.
HUNTINGDON.
C. H. Miller Hardware Co.
KINGSTON.
A. J. Roat.
LANCASTER.
Reilly Bros. & Raub.
Steinman Hardware Co.
Herr & Snavely.
LEBANON.
Geo. Krause Hardware Co.
LEWISBURG.
C. Dreisbach's Sons.
POTTSTOWN.
J. Fegely & Son.
POTTSVILLE.
Bright & Co.
READING.
Bright & Co.
John H. Obold & Co.
Stichter Hardware Co.
Bard Hardware Co.
SCRANTON.
Bittenbender & Co.
Foote & Shear Co.
WILKES-BARRE.
C. Morgan's Sons.
Phelps, Lewis & Bennett Co.
The Pennsylvania Supply Co.
WILLIAMSPORT.
Kline & Co.
YORK.
P. A. & S. Small.

DEATH OF EDWIN BINDLEY.

EDWIN BINDLEY, a widely known manufacturer and business man of Pittsburgh, died of pneumonia at his home in that city on Saturday, March 10, after an illness of only one week. Mr. Bindley was born in the First Ward, Pittsburgh, on March 10, 1842. A short time later the family removed to the Sixth Ward, where his father, the late John C. Bindley, was for many years a prominent contractor. Mr. Bindley attended the Sixth Ward Public Schools and finished his education in Professor Smith's Academy, after which he became associated with his father, and by reason of strict and energetic attention to his duties he soon acquired a thorough and practical knowledge of the business and while still a very young man bought his father's interest and was so successful that in 1882 he had acquired a handsome competency, which enabled him to retire from active business. Although at times he employed large numbers of workmen, his treatment of them was such that he never encountered the slightest controversy with them, but enjoyed their full confidence.

While engaged as a contractor he represented the Sixth Ward in Councils and took an active interest in its



EDWIN BINDLEY

deliberation. He never allied himself with any faction, but exercised his best judgment in all public questions, and up to the time of his death he was intensely interested in all matters pertaining to the welfare and prosperity of his community and his influence was potent.

After retiring from the contracting business he devoted some three years to extensive travel, visiting Europe and the Continent, as well as the leading points of interest in this country. After returning home he became interested in a number of enterprises. For many years he had been president of the Duquesne National Bank and its success can be largely attributed to his personal influence, because he possessed on account of his known integrity and strictly honorable methods the high regard and esteem of all those with whom he came in contact. His word was as good as his bond.

In the late seventies he became associated with his brother, John Bindley, in the Bindley Hardware Company and had been its vice-president since its incorporation, in 1890. While not taking an active part in the conduct of the business, yet his personality had always been a factor in the company and his sunny disposition had cheered those round about him. It is noteworthy to refer here to the warm affection that had always existed between the deceased and his brother. Theirs always seemed to be a common cause.

Upon the organization of the Pittsburgh Steel Hoop Company, in 1899, Mr. Bindley became its president, and later, when the enterprise was merged into the Pittsburgh Steel Company, he became vice-president of the latter corporation and devoted considerable time to its affairs. It was his delight to meet the employees of the company, encourage them and scatter sunshine in their pathway. He took pride in the knowledge that his means assisted the employment of an army of men and that it contributed to the support of them and their families. Mr. Bindley was also president of the Neely Nut & Bolt Company of the South Side and kept in touch with its business.

Many years since he succeeded his father as a trustee of the Dollar Savings Bank and had been for some time a vice-president of that institution. He was financially interested in many other institutions and aided materially in building up the great industrial center of Pittsburgh.

In 1884 Mr. Bindley was married to Mary, daughter of the late John Musgrave, who survives him. His domestic life was exemplary. He delighted in his home and found thorough happiness there. He is survived also by two sisters, Mrs. Zabina Johnston and Mrs. Mary B. McMillan, and two brothers, John and Josiah Bindley, of the Bindley Hardware Company.

He was a prominent member of Calvary Episcopal Church and in his unostentatious way contributed much to charity, and many beneficiaries could so testify. Mr. Bindley was a member of the Duquesne, Union, Country and Bellefield clubs. His was a genial, happy disposition. His friends were legion and he will be sadly missed by all who knew him, and certainly his useful, upright and honorable career should stand as an example for others to follow.

DEATH OF WILLIAM J. STAIRS.

WILLIAM J. STAIRS, president of Wm. Stairs, Son & Morrow, wholesale Hardware, Halifax, N. S., died on the 27th ult. in his eighty-seventh year. For over threescore years Mr. Stairs was connected with the firm as well as being conspicuously identified with the commercial and financial life of Nova Scotia.

NATIONAL RETAIL CONVENTION.

AS already announced, the annual meeting of the National Retail Hardware Association will be held in Chicago, March 20, 21 and 22. The headquarters of the association will be at the Great Northern Hotel.

This year's convention promises to be a very interesting and largely attended gathering.

THE STANLEY WORKS, New Britain, Conn., and 79 Chambers street, New York, in accordance with their usual custom have issued a hanging calendar for 1906, which is a good example of drawing and color work, the calendars of this company always possessing some artistic touch that renders them especially acceptable to those fortunate enough to get them.

BULLARD AUTOMATIC WRENCH COMPANY, Providence, R. I., has issued a folder, in which attention is cleverly called to the Wrench by adapting familiar phrases and expressions used by well-known advertisers. In this way it is pointed out that with "Great Nuts Uneeda Bullard"; for its power "There's a reason"; the Bullard "has the strength of Gibraltar," &c. This Wrench was put on the market about a year and a half ago and has had a very large sale.

P. HAYMAN, proprietor of the American Importing Company, London, England, will arrive in New York about March 20 to purchase goods of American manufacture, and may be addressed at P. O. Box 521, New York. This company deals exclusively in products of American origin, the business having been established some eight or nine years ago. Some of the lines, which are diverse in character, include Specialties in Hardware, Trunk Fittings, Accessories for Automobiles, Toys and Fancy Goods, Stationers' Hardware and Sundries, Cut Glass Ware, &c. Mr. Hayman solicits offers and propositions from American manufacturers for representation abroad.

TRADE WINNING METHODS.

This department is for the description of approved methods of carrying on and extending business, and a cordial invitation is given to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.

STOVE MAN WINDOW DISPLAY.

AN exhibit which attracted much attention while it occupied its place in the window was recently made by Scott Brothers, Sullivan, Ind. It was the reproduction of a man out of articles taken from stock. A Heating Stove furnished the principal portion of the figure, the arms and limbs projecting from the upper part of the Stove in such a manner as to produce a sitting attitude, the lower part of the Stove completing the effect. The limbs were 6-inch Stove Pipe, 2-gallon Buckets supplying the feet. The arms were rolls of Miners' Blasting Paper, with Husking Gloves for hands. The head was a Milk Bucket and Milk Strainer, with Steel Tapes for eyes and Hemp Packing for hair and beard. Wm. C. Kell, who is employed in the store, is to be credited with getting up the exhibit.

HARDWARE MERCHANTS' CATALOGUES, BULLETINS, STORE PAPERS, &c.

A MARYLAND CATALOGUE.

An imposing catalogue has recently been issued by Samuel Emmert, Hagerstown, Md., who deals largely in Hardware, Agricultural Implements, Harness, Seeds, &c. The catalogue is a book of nearly 200 pages, 7½ x 10 inches, with full index. The catalogue represents a wide variety of the leading articles in Mr. Emmert's lines and is copiously illustrated. Prices are not mentioned because of the fluctuations in the market. The back cover contains an exterior view of Mr. Emmert's double building at 43 and 45 W. Washington street, while his own portrait appears as a frontispiece.

A HARDWARE BULLETIN.

With the Christmas holidays the Farrar-Welshons Hardware Company, 6020 Penn avenue, Pittsburgh, Pa., embarked in the publication of the *Hardware Bulletin*, which will be issued at intervals in the interest especially of seasonable goods. It is a well printed circular containing eight large pages, with numerous illustrations and prices. The company is much pleased with the business results following the distribution of the bulletin.

A TEXAS BOOKLET.

"Our Drummer" is the title of a booklet, about 6 x 9 inches in size, 32 to 40 pages, which the Dickson Hardware & Furniture Company, Cleburne, Texas, has found especially effective in securing business, especially from the farming community. The company advises us that the booklet costs but little more than large circulars, while it accomplishes very much more good. It is intimated that through it many orders were obtained that would have gone to catalogue houses otherwise. The booklet is profusely illustrated and net prices are given on selections from the company's large line of Hardware, Stoves, Furniture and Carpets, which are guaranteed for a month or two following the distribution of the catalogue. That the company has confidence in its offerings is evident from the notice occupying a prominent position on the front cover: "Return Our Goods if They Don't Please, and Get Your Money Back."

A FEBRUARY CIRCULAR.

Frank D. Wheelock, Hardware and Implement merchant, Sugar Grove, Pa., has lately distributed an illustrated circular containing eight large pages, in which attention is called to sugar camp supplies, Grain Drills, Cultivators, Buggies, Wagons, Fencing, Plows, &c. The last page of the circular is headed "For Women Only," and here mention is made of articles for use in and about the house, such as Ranges, Spoons, Forks, &c., Linoleum, Oil Cloth and Carpet Lining, Paints and Varnishes, Washing Machines, Bread Makers and other kitchen and house furnishings.

"THE HARDWARE STORE NEWS."

The Walter Hardware Company, South Milwaukee, Wis., with January began the publication of a monthly paper "for the edification and benefit of the public in general and our patrons in particular," under the title of *The Hardware Store News*. The initial number consists of four pages, 7¾ x 11 inches in size, three columns to a page. Referring to the paper and its purpose the company says, in part: "Please do not consider this paper merely as an advertising sheet that deserves but scant attention. While it is meant to bring us more business, and to that end will contain much matter of vital interest to the prudent buyer, it will also present from month to month many interesting topics about the household and notes from our enterprising city." In accordance with this platform some general matter of local interest is provided in connection with the store intelligence. Referring to the business and its conduct the company says: "We are making an earnest effort all the time to improve our service—to minimize errors, quicken deliveries and in general come nearer to the high standard we have set for ourselves. In that effort we welcome the co-operation of our customers. We count it a favor when any customer tells us wherein he thinks our system could be improved." The advertising in the first number gives special prominence to Gray Enameled Ware. Table Lamps, Oil Heaters and Pocket Cutlery also come in for attention.

AN EIGHT PAGE QUARTERLY.

J. M. Thompson & Son Hardware Company, Owatonna, Minn., has commenced the publication of what has been christened the *Farm and City Hardware Guide*. It will be issued quarterly at the beginning of the four Hardware seasons. The *Guide* is a full sized country paper of eight pages, six columns to the page. It is sent through the mails in Government stamped envelopes of the largest size, the addresses being typewritten. The circulation of the first number was about 25,000. All of the reading matter, which is of an interesting and timely character, is prepared under the supervision of the company. In addition to its own advertising the company accepts announcements from other houses, some of whom have written flattering letters as to the results. The Messrs. Thompson are more than pleased with the reception accorded their new departure.

TRADE ITEMS.

THE J. D. WARREN MFG. COMPANY has purchased the large plant of the Ellington Mfg. Company at Quincy, Ill., for the extension of its business. Equipment is now being removed from the old plant at Quincy into the new works and new machinery added which will make the plant modern in every way. The display rooms of the J. D. Warren Mfg. Company are in Masonic Building, Chicago. The company manufactures a complete line of Cabinets, Shelving and other Furnishings for Hardware stores.

ST. JOSEPH PUMP MFG. COMPANY, St. Joseph, Mo., recently sustained a serious loss from fire, which destroyed nearly half the plant. The company reports that it will shortly be in position to resume operations in full, and in the meantime is in a position to take care of its old customers.

THE PEERLESS SKATE COMPANY, 208 French street, Lowell, Mass., has been organized to manufacture a new Skate, further announcement of which will be made later. The officers are: President, E. G. Butterfield; secretary, Judson A. Phillips; treasurer, William N. Osgood.

THE winner of the dozen fleece-lined buggy storm aprons given by the Indianapolis Tent & Awning Company, Indianapolis, Ind., and which were used in the guessing contest at the recent Indiana Hardware convention, was N. A. Loch of Loch-Dirkson & Co., Decatur, Ind. The contest consisted in guessing the time a watch would stop.

THE ODELL HARDWARE COMPANY, Greensboro, N. C., sustained a slight loss by fire on the 9th inst. The fire originated in the basement of the office building, to which structure it was confined. Only a small quantity of goods was carried in the basement. The office floor was badly damaged, although all of the most important records were saved. Business will not be interrupted in any way, but as all its catalogues and trade literature were destroyed, the company will value early copies of printed matter issued by manufacturers.

THE PIKE MFG. COMPANY, Pike, N. H., is distributing a neat souvenir in the shape of a combined paper weight, blotter and sharpener, which will be sent to the trade on request. The souvenir is of circular form, about 5 inches in diameter, and comprises a small corundum wheel surmounting and attached to half a dozen blotting pads. The wheel serves as a handy sharpener for Pocket Knife, Ink Eraser, &c., and the whole forms a useful and attractive desk auxiliary.

SOUTH DAKOTA RETAIL HARDWARE ASSOCIATION.

FOR some years the interests of the retailers generally of South Dakota have been looked after by the South Dakota Retail Merchants' Association, which numbered in its membership merchants in all lines, including

E. D. HAWKINS, President.

Hardware. Several months since, however, the Hardwaremen decided to form an association of their own, feeling that their interests would be better served thereby and having in mind the influential and successful associations of their brother merchants in North Dakota and

OTTO E. MUELLER,
First Vice-President.

F. I. PIXLEY,
Second Vice-President.

other States. As fully noted in our issue, January 25, a meeting for the purpose of organizing such an association was held at Mitchell on January 17 and 18. It was attended by an exceptionally large representation of the mer-

NOAH KELLER,
Secretary.

B. G. WATTSON,
Treasurer.

chants of the State, and the gathering was an enthusiastic and enjoyable one. The association started on its career with an excellent membership, comprising some of the best known and most progressive Hardwaremen of the State, and the prospect for the enrollment of a large percentage of the South Dakota merchants before the next annual meeting, which will be held at Aberdeen, is regarded as very promising. Herewith we give portraits of the officers of this new and sprightly association, as follows: President, E. D. Hawkins, Vermillion; first vice-president, Otto E. Mueller of the Witte Hardware Company, Aberdeen; second vice-president, F. I. Pixley of F. I. Pixley & Co., Montrose; secretary, Noah Keller of Noah Keller & Son, Woonsocket, and, treasurer, B. G. Wattson, Chamberlain.

Correspondence.

Association Entertainment.

To the Editor: May we through the columns of your valuable paper suggest that an abuse is now creeping into the New York State Retail Hardware Association under the guise of courtesy. As the association grows in numbers and the attendance naturally increases a little spirit of rivalry comes up between the cities in regard to entertaining the guests. This will soon become an item of a good deal of expense to the parties who have always put up for the bill. Of course they have never made any complaint of it and have very kindly and willingly entertained us.

We think also that while the courtesy is willingly offered we should not put ourselves under obligations to the jobbers or salesmen, as if there is any obligation at all it is for the good will and friendship of the salesmen to the dealers, as manifested in all the dealings we have with them.

We would like to hear from the members of the association in regard to the position they occupy on the question.

MEMBER.

WELLS & NELLEGAR COMPANY'S NEW CATALOGUE.

THE WELLS & NELLEGAR COMPANY, Chicago, Ill., has just issued a fine new illustrated and descriptive catalogue of nearly 1200 pages, each 11½ x 9 inches. The company is a large jobber of Cutlery, Ammunition, Sporting Goods, Fishing Tackle, Tin Ware, Enameled Ware, Nails, Barbed Wire, Tin Plate and various kinds of metals used in manufactures. The book is an exhaustive exposition of these lines of goods. Many *facsimile* illustrations are given in connection with Axes, Hatchets, Mowers, assorted Padlocks on cards, Wringers, Floor Oil Cloth Rugs, Linoleums and Floor Oil Cloth, Paints, &c. In Hammocks there are eight pages of large illustrations, showing Hammocks swung as in use, with 26 small sections of other patterns, all in actual colors, to guide a buyer's choice. The general arrangement and get up of the book are praiseworthy and reflect much credit on the company.

GARLAND NUT & RIVET COMPANY.

THE GARLAND NUT & RIVET COMPANY, Pittsburgh, intends to make some large additions to its works at West Pittsburgh, Pa. A new building will be erected of brick construction 62 x 160 feet and two stories high, which will increase the floor space available for manufacturing to 66,000 square feet. This extension to its plant is made necessary by the largely increased business the company is receiving for its new lines of small Machine, Carriage and Tap Bolts. Other products manufactured by the company are Small Rivets, Cold Punched and Semifinished Nuts and Galvanized Pump Chain.

SPENCER J. STEINMETZ, 161 Devonshire street, Boston, Mass., has been appointed exclusive sales agent for the Ruppman Door Holder, a device for holding any door open on any surface. The manufacturers refer to the Holder as being small, compact and neat in appearance. One size serves all doors. Many prominent buildings have already been equipped with the Holder, and it is proposed to market them largely through the Hardware trade.

Our Washington Letter.

THE PARCELS POST BEFORE CONGRESS.

WASHINGTON, D. C., March 13, 1906.

THE campaign of the retail merchants of the country, in which the Hardware men have been first and foremost, to prevent the adoption of a domestic parcels post or the consolidation of printed matter and merchandise at one-half the postage rate now paid on the latter has resulted in a complete victory so far as the annual post office appropriation bill is concerned. This measure, upon which it was sought to engraft these paternalistic schemes, has been completed and will be reported to the House in the course of a few days.

The rejection of the consolidation scheme whereby the cost of sending marchandise through the mails would have been reduced from 16 to 8 cents per pound is a notable triumph for the retail merchants of the country. The project has been urged early and late for the past three years and in his last annual report to Congress the Postmaster-General gave it a strong indorsement as a form of substitute for the domestic parcels post and designed as a sop for the advocates of that colossal scheme for looting the Federal Treasury. Subsequently both the Postmaster-General and the Third Assistant, in arguments before the House Post Office Committee, urged the adoption of the consolidation project, both on Administrative grounds, "as a convenience to the public," and because it was desired to meet the criticism that packages can be sent from abroad to points in the United States at a lower rate than is now permissible between two points in this country.

The House Post Office Committee gave respectful attention to the recommendations thus presented, but after careful consideration decided to reject both the parcels post amendments of the various postal reform organizations and the consolidation plan of the Post Office Department. The attitude of the members of the committee may be gathered from the following informal statement made to the correspondent of *The Iron Age* by Chairman Overstreet a day or two before the final vote on the bill was taken:

> The post office appropriation bill will be completed within the next day or two, and I think I may safely say that when reported to the House it will not contain either a provision for a domestic parcels post or for the consolidation of third and fourth class mail matter at a rate of postage just one-half that now paid on merchandise. The consolidation proposition, with due respect to the Post Office Department officials who are urging it, would mean simply the cutting in two of the postage bills of the great mail order houses and would be of very little advantage to any one else. From a governmental standpoint the proposition has ramifications which need only be briefly described to show the impracticability of the idea. At the outset there would be a heavy loss of revenue, which could only be made up by a very large income in the use of the mails for the handling of merchandise. If this increase should occur it would so burden the mails that it would be necessary to provide more mail cars and more mail carriers and ultimately to increase carriers' salaries. Additional equipment would have to be provided, and the most accomplished postal expert cannot foreshadow where the thing would end.

While Chairman Overstreet's statement will be most encouraging to those who have fought these paternalistic schemes, yet it should be remembered that their promoters have many other opportunities to secure their adoption. The appropriation bill may be amended on the floor and in the Senate Post Office Committee or on the Senate floor. It may even be modified in important particulars in conference after it has passed both houses. So far as the House is concerned there is less danger than in the Senate. Representatives from all parts of the country are becoming thoroughly aroused to the danger not only of the domestic parcels post but of the consolidation scheme, which the shrewdest and most experienced members recognize as a mere entering wedge soon to be expanded into a full fledged project for handling unlimited quantities of merchandise by mail. Retail merchants everywhere will be interested in brief extracts from interviews which prominent members of the House have given to the correspondent of *The Iron Age* with regard to both these schemes. No member of the House has made a stronger fight against the parcels post than Representative Hedge of Iowa, a leading member of the House Post Office Committee. He says:

> I have been deluged with petitions and memorials urging both the parcels post and the consolidation schemes. They are of the same general stripe in my opinion, and I have not hesitated to say that I am opposed to both of them and on the same ground. I believe it is my duty as the Representative of my district in Congress to protect my people to the utmost of my ability, and in opposing these projects I am simply safeguarding the interests of the merchants whom I represent. These merchants are not limited to those conducting little cross-roads stores, but include hundreds who are running relatively large establishments and whose success and prosperity must depend upon the trade of the communities in which they live. The interests of the local merchant, the local newspaper and the farmers residing in the surrounding country are so interwoven that it is impossible to separate them or to enact legislation injurious to one that will not injure them all. My people are not asking special favors, and I intend to do what I can to protect them from the injurious effects of measures passed in the interest of the monopolistic mail order houses.

Representative Grosvenor of Ohio has always consistently opposed these schemes. He says:

> You ask me about the parcels post bills. I have heard of them before. I am against them. As to the proposition for the consolidation of merchandise with printed matter to go through the mails at a uniform rate of 8 cents per pound I have heard of that, too. I shall oppose all these projects if they ever live to be reported to the House, but I do not believe they ever will; certainly not at this session. I would suggest a slight amendment to the consolidation scheme—namely, that the Government be authorized to establish a fast freight line to carry all the merchandise of the country. That would be paternalism with a vengeance and satisfy the class of people who think it is a function of government to care for their special interests.

The people of the South are awaking to the necessity of protecting themselves from the mail order houses, which within the past year or two have invaded that territory seeking to establish and to buy the output of the local factories with a view to distributing goods to their mail order patrons at the lowest possible cost for transportation. Representative Candler of Mississippi, one of the most conservative and far-seeing of the Southern members of the House, makes some interesting comments upon these projects. He says:

> I have received some petitions from both sides relative to the establishment of a parcels post. All small merchants and even the large commercial houses in my district strongly oppose the passage of any such measure. In a State like Mississippi, where credits largely obtain, the merchant has been the banker of the planter, furnishing him money and supplies until his crops were harvested and sold. Now comes a scheme of foreign traders which proposes to cut the ground from under this merchant. It may be "business" from a purely theoretical standpoint, but it is hardly reasonable to suppose that our country merchants will submit without a vigorous fight, and they are making it right now. I shall record my vote against this proposition. The consolidation scheme seems to be a part of the same general plan and does not meet my indorsement.

Few men occupy a more prominent place in the public eye than Representative Hepburn of Iowa, the author of the pending bill extending the Federal control of freight rates. Mr. Hepburn has always been the champion of the common people, and with regard to the parcels post schemes he says:

> I stand just where I have always stood on the question of a parcels post. I am unalterably opposed to the scheme of building up the mail order business of this country at the expense of the country merchant. As regards the scheme of mail consolidation I fear that it is but a link of the same old sausage, or rather the same old pill with a new coating.

These statements are but a few of those that have been made very frankly since the scope of the Post Office Department's plans became known in Congress. The consolidation scheme especially is being strongly disapproved as involving a heavy additional expenditure approximating $2,000,000 or $3,000,000 per annum at a time when the best energies of the department should be directed to cutting down the postal deficit, which is now in the neighborhood of $15,000,000. So serious is the situation with regard to the postal shortage that the department is gravely considering a recommendation to Congress to increase the rate of postage on publications of all kinds with the sole exception of the daily press. The magazines, the intelligently conducted trade papers of the country and thousands of other publications filled with educational matter and information almost priceless to the business community are to be taxed—in some cases out of existence—in order that the monopolistic mail

order houses may be provided with a convenient and cheap distribution system.

A recommendation has already been made to the House Committee for an appropriation sufficient to defray the cost of a thorough investigation by the department to ascertain exactly the amount of the various kinds of second-class mail matter annually carried by the postal service. The present system of keeping accounts does not supply this information in satisfactory form, hence an appropriation is necessary to defray the cost of obtaining the desired data. It is among the possibilities that the committee will make some such provision in order that reliable information may be secured. Legislation would be necessary, however, to change the rates of postage on second-class mail matter, and it is not believed that Congress would be willing to discriminate against magazines and papers, which are as important to the educational and commercial development of the country as the daily press. W. L. C.

Hardware Retailers' Advertising.

A valuable paper on the subject of "Hardware Retailers' Advertising" was read by J. O. Perkins of Butler Bros., Chicago, at the recent annual meeting of the Illinois Retail Hardware Association. The paper, in part, was as follows:

The Hardware retailer who is dissatisfied with the results he is achieving at the present time and who desires to do such advertising as I have in mind needs first to take into consideration certain general trade tendencies. All of us are in business for the purpose of making money. None of us will make as much as he can if he chooses to use up more or less of his energy in fighting against general tendencies much more powerful than any individual can be. There was a time when the average Hardwareman was in harmony with the tendencies of the period, but at this moment too many Hardwaremen are more or less out of tune with modern conditions.

ONE TENDENCY

that no retailer can afford to overlook is that which now disposes people as a whole to give their trade in large measure to the store which shows the greatest variety of merchandise. You need not take any one's word for that, because the fact is made evident in almost every town in the country. In the largest cities the big successes of to-day are department stores, and in your own town supremacy among business men has passed, or is passing, from the one-line man to the retailer of many things. Even the so-called one-line stores of to-day that are still increasingly successful in a large way you will find make a feature of variety in their offerings in at least a bargain department, which in essence is but a variety store within another store.

ANOTHER SIGNIFICANT CHANGE

in trade conditions which Hardwaremen must appreciate before they can hope to better business to the full extent of to-day's possibilities is the lessening importance of men as every day buyers. Not many years ago men figured largely in all kinds of household buying, but to-day, almost exclusively, woman is the purchasing agent of the American home. True, the man may still figure in the buying of a Stove or a Refrigerator, but when it comes to buying the every day wants he is almost an unknown quantity. Failure to recognize that very fact is largely the cause of conditions about which so many Hardwaremen now so loudly complain.

INTO THEIR FIELD WITHIN THE LAST FEW YEARS

has come the retail mail order house, that has succeeded in taking from them much of the trade in the bulkier things which men do still help to buy. As a result the Hardwareman who still is running a store that appeals to men is forced to be a looker-on, while women buy the every day needs of the home at stores that cater to them with the goods women want offered in ways that appeal to women.

So the Hardwareman who wishes to do better advertising and who realizes his need of more every day sales must approach the buying of his goods with the determination

TO CATER MORE TO WOMEN

and with goods in greater variety than heretofore. Quite likely he will be unable to do this until he has removed many of his personal prejudices for or against merchandise and the way it is offered to him.

If he will still insist upon buying only goods of the highest quality or goods which in some other respect can interest only the small minority he certainly ought no longer to complain that he is losing the trade of those who constitute the large majority of his buying public.

He must realize that the day has gone by when people will buy things in one line at one store and in another line at another store, taking without question what the one-line merchant says they, the people, ought to want.

You can't expect to do good advertising if you go on blinking the fact that people to-day buy by preference in the store that shows in greatest variety the very things they want and where they are permitted to buy those things without argument as to why they should want some thing better or different.

REMEMBER THAT EXPERTS MAY SNEER

at cheap goods, but experts are few, while the very cheapness which is the target of their sneers is the convincing evidence that the goods themselves are in great demand.

As an incident of buying preparations for extending invitations that will be accepted it is necessary nowadays to make purchases of goods for definite use as bargains, which are but your reasons why people should come to your store. Continue to sell staples, of course, but quit pushing them on the score of price. Back of your staples put such pushing as will give you a reputation for having the right qualities that will enable you to make a fair profit on them.

Then while competitors are cutting prices on Fence Wire and Nails, do you push to the front popular priced things in every day need, specially bought to be used as your bargains. In getting yourself ready to impress properly those who do accept your invitation to enter do not overlook the

IMPORTANCE OF A STORE ARRANGEMENT

which also will show realization of the fact that women are the every day buyers and that they like variety. The way to sell goods nowadays is to ask people if they want to buy—not only by means of spoken, printed and written questions, but also by the displays of your goods. The modern ideal in store arrangement is to come as near as possible to showing all one has for sale.

GET YOUR GOODS OUT

and down where they can be seen, indicate their prices in plain figures and if they are goods in general want and the prices are such as people in general can afford to pay, the variety being large enough, your arrangement will avoid waste of time in answering questions as to what you have and also help to suggest new wants to all who enter your store. Though you may have brought your store to the highest point of efficiency in accomplishing immediate sales, finally before you do give general invitations to people to enter make sure that those who accept will leave your store satisfied and disposed to come again. You know

IT IS THE COME-AGAIN TRADE

which alone will insure the permanence of a business success, and to get that trade your customers must be made to have implicit faith in the truth of all your statements about your goods. Confidence such as that is a thing of slow growth and careful nursing, yet without such confidence no merchant can hope for success that is permanent.

In all probability no single practice will go further in developing confidence in your store than that of

RETURNING THE MONEY AND TAKING BACK THE GOODS

any time any customer is dissatisfied—cheerfully and without argument. Does the practice pay? The world's greatest retail store goes to extremes to prove the sincerity of its money-back-cheerfully policy. Could you have a better impression abroad in your community than the idea that at your prices you would as soon have your goods as the customer's money? Do not begin the practice, though, unless you really can refund the money

WITH A SMILE,

even though the offer is abused by a patron. It may help you to maintain your cheerfulness to remember that experience shows that the more quickly and smilingly the money is refunded in the first few instances the sooner the requests for refunds become few and far between.

Before extending an invitation to enter your store assure yourself, too, that all who do come in will be made to feel welcome immediately and will not leave feeling anything but pleased with the treatment every one gets in your store.

A good aim to hold before you in striving to gain and keep the confidence of your people is to become known as the store where the

CHILD CAN TRADE AS SAFELY

as the parent. To gain that reputation no one thing will be of more help than to have but one price for each thing, with that price clearly indicated in plain figures.

HAVING MADE YOURSELF FULLY READY

to invite people in, and feeling sure that they will leave satisfied and disposed to come again, you are ready to consider advertising solely as invitations extended to people to come into your store. Most of these invitations will take one of two principal forms—your show windows and your printed matter.

Don't overlook the possibilities in your show windows. Take the hint in the success the 5 and 10 cent stores achieve with outside advertising effort limited to their show windows. Window displays can be good even though they are not built by an expert window trimmer.

Right now, for example, in the model 5 and 10 cent stores, which is a feature of our Chicago sample rooms, there is a window display of Enamel Ware which any Hardware man in any town can build at a trifling money cost. As a matter of fact

THE SIMPLER THE DISPLAY

the more effective the show window is likely to be. Frequent changes are necessary to keep the window interesting, and simple displays are more certain to be changed oftener than elaborate ones. Just a little careful study of the subject will convince you that it is possible for you or your clerks to keep your windows bright and clean and to make simple arrangements of goods in them that will arrest the attention of passers-by. And once you go into the subject thoroughly enough to reach such a conclusion you will need no further urging to improve your show window opportunities.

PRINTED MATTER.

But however expert you may become in the use of your show windows, so long as they are not sure to be seen by practically all who might trade with you your main reliance for urging people to enter your store must continue to be printed matter. Printed matter that will sell goods is not as hard to produce as some interested persons would have you believe. The brilliant effort of the expert who cannot talk horse sense about your goods and prices is worthless in comparison with the poorest home-made description of what you have to offer. Get at the preparation of your printed matter without any feeling that advertising is more than the use of printer's ink in the place of your voice in the sale of your goods.

LOOK UPON EACH ADVERTISEMENT

as nothing more nor less than a new effort to make such a printed presentation of your goods as will make more people than ever before desire what you offer hard enough to come to your store. First make sure that you have the goods necessary for the purpose. Then imagine that the customer hardest to sell is seated on the other side of your desk. Write exactly as you would talk were you determined to make that customer want the particular goods that you propose to advertise. Write it all down

JUST AS YOU WOULD TALK,

and then put what you have written in your desk and forget it for a few hours. Later take a cool view of what you have written for the purpose of cutting out all but enough words to fill whatever space you have decided to use. Still later revise the matter again with the printer in determining what other words may have to be omitted or added in order to give prominence to the right phrases in the space to be used. But do not let the printer or any one else persuade you to cut out or substitute other words for expressions that make the advertisement sound like you.

YOUR PERSONALITY

is what finally brings and holds the trade you get. A reputation for originality is continually being sought by most merchants. The easiest way to get that reputation is for one to be himself in every move he makes. Advertising that sounds like you is not only sure to bring the greatest results, but is also the one kind of advertising your competitors cannot successfully imitate.

Give the question of your advertising as businesslike a treatment as you give to any other feature of your storekeeping. Have a scrapbook in which to paste samples of goods advertising, for which keep constantly on the lookout.

In all other ways keep trying systematically to equip yourself with what will help to make the preparation of your printed matter easy. In that very process you will get rid of the notion that printed advertising, so far as it concerns your store, is in any respect beyond your power. To make the most of the time, money and effort you devote to advertising lose no chance to get the full benefit from each move you make.

If your newspaper advertisement, or a part of it, seems good enough for the purpose, before the type is thrown back into the case have it used

FOR THE PRINTING OF A CIRCULAR

to be mailed or otherwise distributed. Thus you secure both circular and newspaper advertisements at a cost of one setting of the type.

Make your circulars, letters, &c., supplement your newspaper advertisements, and repeat the story they tell in your show windows. By thus making all forms of your outside advertising work together results will be greatest. In newspapers, circulars, &c., as in your show windows and your store itself, keep presenting something new and fresh often enough to avoid staleness, which in the eyes of the modern public is an unpardonable sin in storekeeping.

AND ABOVE ALL,

when that outside advertising does accomplish its purpose, does draw people into the store, lose none of the benefit because you fail to give just what it leads people to expect down to the smallest detail and in treatment fully as much as in goods.

NEW YORK & NEW JERSEY HARDWARE AND IRON ASSOCIATION'S BANQUET.

THE New York and New Jersey Hardware and Iron Association held its seventh annual banquet Thursday evening, March 8, at the Hotel Astor, New York. There was a representative gathering of active members of the association, some of whom had friends as their guests. A number of manufacturers of vehicle materials were also present. The guests arrived during the hour from 7 to 8 o'clock, assembling in a reception room, where there was a *buffet russe* to help while away the time. Dinner was served at 8 o'clock in the Yacht Room, which is *en suite*, built and fitted to resemble the saloon of a large yacht. An orchestra played popular airs throughout the dinner, there being also a professional entertainer who rendered some excellent sketches between addresses. Joseph Ruppert, the president of the association, acted as toastmaster, introducing the speakers, both members and guests, who filled in the time from 9.30 p. m. to midnight with remarks of an informal character.

There seemed to be unanimity as to the substantial benefits received by both members of the organization and manufacturers, resulting from the work of the association, in the way of maintaining prices on a reasonable and fair basis and the avoidance of a large percentage of losses from bad debts. The system pursued in regard to the latter feature is the issuance of a delinquent list of debtors at intervals, in which the dealer who does not meet his obligations properly is cut off from further credit by the members until he is restored to favor by paying up. Who the creditor is does not appear in the notice sent out; merely the fact that a debtor is in arrears is noted in the communication mailed by the corresponding secretary.

The officers for the ensuing year are Joseph Ruppert, president; J. H. Ruwe, vice-president; Henry Bodevin, secretary, all of Brooklyn; Emil Rudolph, treasurer, and Charles A. Hauck, corresponding secretary, both of New York. The Board of Directors consists of William E. Kleine, New York; Walter T. Crane, Newark; J. T. Doremus and P. C. Quackenbush, Paterson, and R. H. Tiebout, Brooklyn, all of whom were present at the banquet. Other members in attendance were P. J. Langler, George Ruppert, W. Tiebout, Charles Ruwe, E. C. Striffler and George J. Hollereith; Edo Van Winkle, Henry Van Winkle and Mr. Reynolds of J. A. Van Winkle & Co.; A. S. Van Sant and L. L. Andrews of W. T. Crane Carriage Hardware Company, and John G. Merkel.

Manufacturing interests were represented by the following gentlemen: E. S. Darlington of Hoopes Bro. & Darlington, West Chester, Pa.; A. G. Mathiason of the Lambertville Spoke Mfg. Company, Lambertville, N. J.; F. W. Wurster, Jr., of F. W. Wurster & Co., Brooklyn; W. L. Cooper of Livingston Nail Company; R. B. M. Cook and W. S. Comly of Russell, Burdsall & Ward, Portchester, N. Y.; L. B. Morris of the Cambria Steel Company, and E. S. Merrill of E. S. Merrill Spring Company, New York. Other guests were M. Eisig, formerly a member of the association, but now retired from active business, and E. H. Darville of *The Iron Age*.

GREENE, TWEED & CO.'S NEW QUARTERS.

GREENE, TWEED & CO., manufacturers of and dealers in Factory and Mill Supplies, Brass Hardware, &c., have just moved from 17 Murray street to 109 Duane street, New York, where they have much larger quarters. The new premises, which have been thoroughly renovated, consist of the street floor and two basements, each 35 x 88 feet, besides additional vault room below stairs. The first floor has been reserved for office use and sales and sample room. The basement is divided longitudinally, with the department for Brass Hardware on one side and a stock of Factory and Mill Supplies, Palmetto Packing, &c., on the other, the front space being used for packing and shipping orders. In the subbasement is carried a large stock of Walrus Leather and other Polishing Leathers, of which the house makes a specialty, carrying much of this material in the original sides and of great thickness. The new quarters are exceptionally well lighted front and rear naturally, as well as artificially, and the building is equipped with power elevators. They also carry a complete stock of the Page Belting Company's Leather Belting and will be pleased to receive new catalogues pertaining to such lines as they handle, especially in Pipe Fittings and Factory and Mill Supplies.

PRICE-LISTS, CIRCULARS, &c.

Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our catalogue department in New York; and at the same time to call our attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

MEAD CYCLE COMPANY, Chicago: Circulars referring to Iroquois Bicycles and Hedgethorn Tires.

NORVELL-SHAPLEIGH HARDWARE COMPANY, St. Louis, Mo.: Spring and summer catalogue covering a full line of Sporting Goods.

STRICKLER HAY TOOL COMPANY, Janesville, Wis.: Catalogue and mailing circular referring to Hay Tools, including Carriers, Forks, Steel Track, Pulleys, &c.

SAMUEL WINSLOW SKATE MFG. COMPANY, Worcester, Mass.: Roller Skate catalogue G, illustrating, listing and describing in detail an elaborate line of Roller Skates.

MARLIN FIREARMS COMPANY, New Haven, Conn.: Catalogue of Marlin Repeating Rifles, Shotguns, &c., showing several additions to the line and various minor improvements; also book of testimonials, entitled "Marlin Experiences."

CALDWELL MFG. COMPANY, Rochester, N. Y.: Illustrated catalogue of Window and Door Hardware and specialties, including Nutmeg Graters, Garment Hangers, &c.

T. B. C. BURPEE, 2639 North Seventeenth street, Philadelphia: Circular referring to Imperial Roasters.

J. S. WOODHOUSE, 191-195 Water street, New York: Illustrated catalogue, covering an extensive line of Agricultural Implements for farm, field and garden.

GOULDS MFG. COMPANY, Seneca Falls, N. Y.: Catalogue of Goulds Sprayers for orchardists, market gardeners, florists and poultry and stock raisers.

INTERNATIONAL FENCE & F. COMPANY, Columbus, Ohio: Booklet referring to Jones Gates and Fence and containing price-lists.

PIKE MFG. COMPANY, Pike, N. H.: Price-list booklet referring to Oil Stone, Scythe Stone and Razor Hone selling assortments in display boxes.

CRONK & CARRIER MFG. COMPANY, Elmira, N. Y.: Catalogue of Barn Door Hangers, Garden Tools, Pliers, Screw Drivers, Pruning Shears and Hardware specialties.

CLIPPER LAWN MOWER COMPANY, Dixon, Ill.: Circulars Illustrating Lawn Mowers and Marine Gasoline Engines.

ROBERTS MFG. COMPANY, Somerville, Mass.: Booklet referring to Victor Bolt Clippers, &c.

ROE & CONOVER'S STORE.

AN original method of lighting has been adopted by Roe & Conover of Newark, N. J., who operate a very large Hardware and supply establishment. The main showroom for Tools and Household Hardware of the company has been fitted with tubes of the Moore Electric System, a Newark invention, which consists of a glow tube through which travels a light produced by the incandescence of gas. The tube is sealed, has welded elbows and joints and is suspended from the ceiling of the store, lighting it all around. The light gives a daylight effect and it is claimed to be the only one giving the true color value to the human eye. It has proved an excellent advertisement as well as an innovation of value, and nightly the front of the store is thronged with the curious. A snap-shot photograph taken late at night just before closing time, without the aid of a flashlight, shows the store just as it would appear in a picture taken in daylight, with the exception that the glow tubes, which in the day resemble steam pipes, show up white.

CANADIAN TAP & DIE COMPANY.

THE CANADIAN TAP & DIE COMPANY, Ltd., Galt, Ont., W. M. Preston secretary and general manager, has been organized to manufacture Taps, Dies, Screw Plates, Screw Cutting Machinery, &c. A modern factory has been purchased at Galt. The company is licensed manufacturer for Canada of the Little Giant brand of Screw cutting tools made by Wells Bros. Company, Greenfield, Mass., including Taps, Dies and Screw Plates. Machinery for manufacture has been installed and the company's stock is now complete and ready to supply the trade. The company will not for the present go into the manufacture of Bolt Cutters. The company proposes to maintain the same high standard of quality of its licensed products as that established by the Wells Bros. Company.

REQUESTS FOR CATALOGUES, &c.

The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM IRWIN-HUGHES COMPANY, Whitener, Ark., which will begin business about April 1, handling Shelf and Heavy Hardware, Implements, Steam and Gas Engines and Wood Working Machinery.

FROM CHAS. ZIMMERMANN & SONS, Baltimore, Md., general Hardware and Paint merchants.

FROM DE COOK & BRINK, who have succeeded De Cook, Brink & Co., Orange City, Iowa. They will carry a retail stock of Shelf and Heavy Hardware, Stoves, Tinware, Paints, Oils, Sporting Goods, Fencing, Cream Separators, &c.

FROM WILLIAM BLANNING, Williamstown, Pa., who has purchased the Hardware business formerly conducted by Amos Lebo and will continue at the old stand.

J. CURLEY & BRO., 6 Warren street, New York, manufacturers and importers of and dealers, both wholesale and retail, in fine Cutlery of all kinds, have been compelled to lease other quarters, owing to the contemplated razing of the building now occupied and others adjoining after May 1 next, to secure a proper site for the erection of a large office structure on the northwest corner of Broadway and Warren street. The business will be moved, as soon as the new quarters can be prepared, to 318 Broadway, southeast corner of Broadway and Pearl street, which for years was occupied by Von Lengerke & Detmold, now at 349 Fifth avenue.

MISCELLANEOUS NOTES.

Expansion Bolts.

Star Expansion Bolt Company, 147-149 Cedar street, New York, has changed the internal construction of its Star Union expansion bolt so that it will fit lag screws of any standard of threading. It is remarked that ½-inch lag screws are threaded by different manufacturers six threads to the inch and also five threads to the inch. With the old style of expansion shield only one of these threads could be used in the expansion parts, whereas with the new style both the five and six thread lags can be used in the one shield. This feature is covered by patents. The outside of the new style of expansion is the same as the older kind, and no strength or holding qualities have been sacrificed by modifying the internal arrangement. The company has also added to its line of machine expansion bolts, which are largely used for making strong fastenings, more especially to stone and for work of that character. The parts are fastened together with strong bands which keeps them intact and firm, even after their insertion in the wall, so that it is impossible to lose the interior nut. The shields are so threaded as to take the regular U. S. standard machine bolts.

Encaustic Metal Enameled Ceilings and Side Walls.

The Wheeling Corrugating Company, Wheeling, W. Va., and 47-51 Cliff street, New York, has just issued a handsome new illustrated catalogue of encaustic metal ceiling containing 34 pages, each 12 x 9¼ inches. A striking feature of the book is the five full page illustrations of beautiful designs in enameled ceilings in various combinations of cornice, filler, border, corner and field, which are divided into five color arrangements, the colors in *fac-simile* to give an idea of the actual effect when installed. Another point of importance is the flexibility of the various colored enamels on the metal, so that it will not chip or break off in putting on. The metal is covered on both sides to prevent oxidization, and can be sold at approximately 8 to 10 cents per square foot, dependent on the designs. It costs about 5 cents a square foot more than the plain ceilings painted only with a priming coat, so that some of the extra cost is offset by the fact that the work is done when the material is on. Provision is made for having the nails furnished harmonize in color with the metal they hold in place. Each coat of enamel and also the gold decorations are burned on to the metal separately under the action of intense heat. Many other beautiful designs in this class of metal ceilings in all the various parts are shown, to be painted after it is put on.

Clipper Pony Mower.

Numerous changes have been made by the Clipper Lawn Mower Company, Dixon, Ill., in its 1906 type of pony mower. The solid wheels and sides have been replaced with spoked wheels and spoked sides. A ball bearing yoke has been placed on the axle to prevent the lever from dropping and from destroying the shearing surface. The movement of the knives, however, remains unchanged.

Small Power Motors.

The Westinghouse Electric & Mfg. Company has lately perfected a line of motors for light power service, such as operating sewing machines, dental apparatus, coffee grinders, small ice cream freezers, phonographs, sign flashers, moving window novelties and innumerable other adaptations, some of which are here shown. The smaller sizes may be attached to an ordinary incandescent lamp circuit, furnishing a profitable day load for lighting companies. These motors follow very closely the design of the well-known Westinghouse fan motors, being built for both alternating and direct current circuits, either 115 or 230 volts. The direct current motors are either shunt or series wound, and the alternating current motors are wound for 25, 60 or 133 cycles. The efficiency of all machines is exceedingly high. The base of the motor consists of a separate casting, the frame being drilled and tapped, so that the feet may be fastened in any one of four different positions. This construction adapts the motor for mounting in any position. The screw holes in the base are slotted to allow belt adjustment. A two-

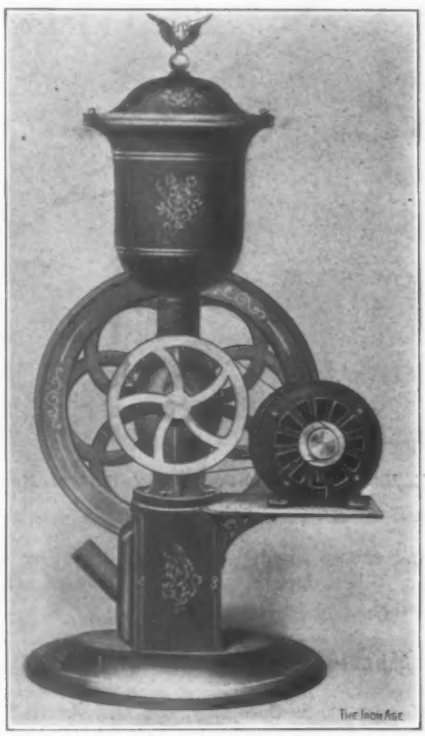


Fig. 1.—Westinghouse ⅛ Horse-Power Alternating Current Motor Driving a Coffee Mill.

step grooved pulley, suitable for a cord or round belt, is supplied with each motor. The speed obtained by driving from the larger step is about twice that of the smaller. The bearings are self oiling and similar in construction to those of the fan motors. They are provided with vertical oil cups, with a wick which effectually lubricates the shaft, and a suitable return channel prevents

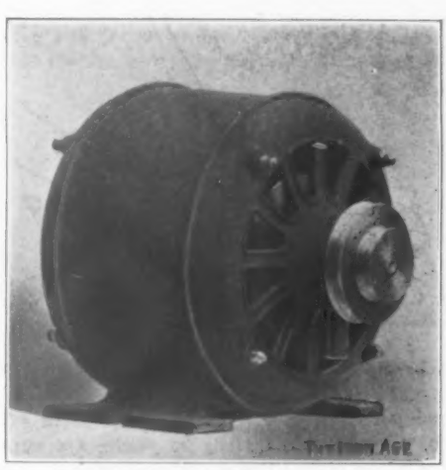


Fig. 2.—⅛ Horse-Power Induction Motor with Pulley Attached for Alternating Current.

the dripping of oil from the bearings. The leads are brought out through hard rubber bushings, and connection to the motor is easily made. An ordinary lamp cord and plug may be attached to the motor leads for connection to an incandescent socket or receptacle. All motors are finished in black enamel, with trimmings of brass, allowing them to be installed where neat appearance is essential. The alternating current motors are of the single phase induction type, with open end frames and split phase winding, the starting coil of which is

automatically cut out as the motor comes up to speed. A self acting friction clutch engages the load after partial speed has been attained. The direct current motors are inclosed and are supplied either series or shunt

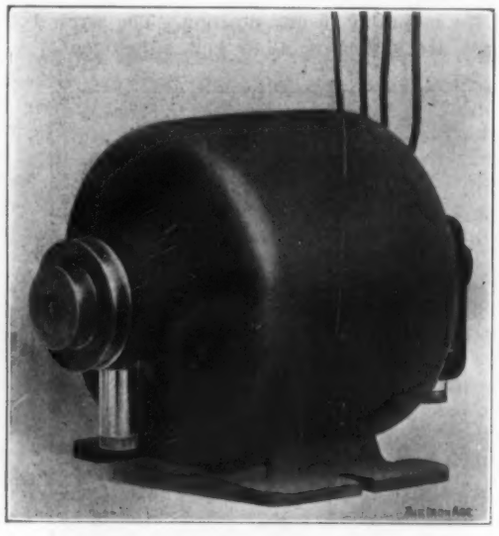


Fig. 3.—⅛ Horse-Power 110-Volt Direct Current Motor with Pulley Attached.

wound, and are so constructed that no starting device is necessary. When desired grooved pulleys of other sizes are furnished.

Martin Folding Clamp Skate.

The Martin Skate Company, 614 Old South Building, Boston, Mass., is the name of a new Massachusetts corporation organized to manufacture an entirely new skate, as here shown. The prime features of this skate are the extremely narrow space into which it can be easily and instantly folded as soon as it is free from the shoe, it being collapsed or folded at the top to less than a half inch laterally, and the light weight, the 12-inch size weighing but 15 ounces to each skate. For convenience

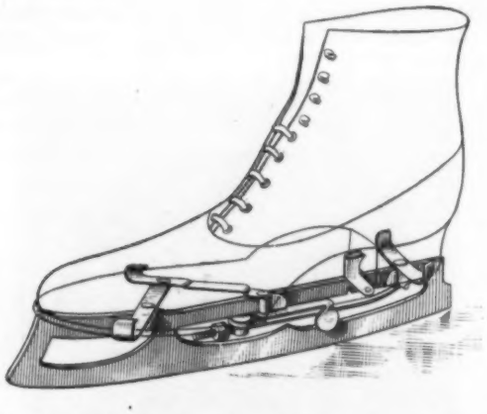


Fig. 1.—Martin Folding Clamp Skate, Attached to Shoe.

in carrying about neat rectangular wallets of leather or cloth, according to quality of skate, are supplied in which to place them, the wallet measuring a half inch longer than the skate and 6½ inches wide flat, or 3¼ inches folded a half turn, with a skate in each pocket, being when folded but slightly in excess of 1 inch at thickest portions, thus being suitable for any ordinary pocket. In the majority of ladies' sizes a pair can be readily carried in the average muff, unnoticed, and leaving room for the hands. The skate is exceptionally light, the blades measuring 7-32 inch on skating surface and tapering to 7-64 inch at top. The main part or blade is forged from one piece of steel. The remainder of the skate, consisting of a few simple parts, is of sheet steel and operated by a side lever, as commonly used in lock lever skates, by means of which both sole and heel are simultaneously gripped, after once adjusted, in a single movement, bringing both front and rear clamps into compact alignment with the skate blade when off the foot. The toe clamps come in direct contact with and sustain the sole throughout its width and overlap the

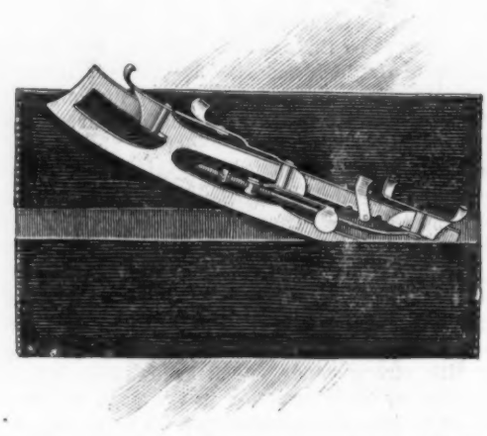


Fig. 2.—Same Skate Partly in One Pocket of Wallet.

upper edges, while the heel clamp clutches the leather heel on the side, a small clamp, capable of three positions through a distance of ¾ inch, keeping the front of heel from moving forward. By clamping the heel at sides, not only is good holding power attained, but a badly worn or run down heel at the back does not interfere with getting a good secure grip. The clamping lever is firmly supported on the blade, and it is said will not sag or become loose. The width of sole and length of heel is automatically conformed to by turning forward or back the knurled round nut on the end of the threaded clamp rod in center of skate blade. Another important point, to which the company directs attention, is that the clamps constantly grip on lines parallel to the

Fig. 3.—Top View of Skate, Folded, for Carrying in Wallet.

welt of the shoe, instead of parallel to runner of skate, thus giving great holding power. There are but six rivets in each skate, three of which, for heel, toe and center, are split, so that the two rear rivets slide back and forth on each side of upper part of blade, the front rivet under ball of foot being of the same construction, but pinned permanently in position. All the skates will be highly polished and nickeled, from those made of moderately priced steel to the highest grades of steel welded to iron and tempered. Both club or rink and hockey patterns will be furnished.

Galvanized Self-Dipping Well Bucket.

The Wheeling Corrugating Company, Wheeling, W. Va., and 47-51 Cliff street, New York, is manufacturing

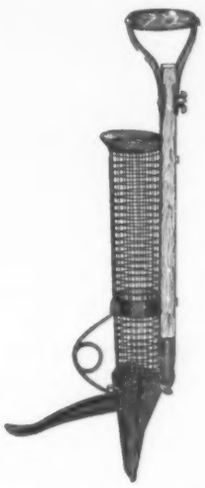
Galvanized Self Dipping Well Bucket.

the patented self-dipping well bucket here illustrated. The bucket is so made that it fills itself as soon as it

strikes the water, the special ear on one side containing a flat brass spring, which causes the bucket to tilt as the bottom touches the water and so fill quickly. The bail after passing through the ear enters the brass spring, to which it is securely fastened. The body is made of heavy sheet iron and smoothly galvanized after it is made, being intended to withstand rough usage.

Sheffield Hand Potato Planter.

Sheffield Mfg. Company, Burr Oak, Mich., is offering the hand potato planter shown herewith. The handle is adjustable to the hight of the operator. The tube or seed



Sheffield Hand Potato Planter.

guide is made of galvanized wire screen. The jaws and points are referred to as being particularly well adapted to the use for which they are designed.

Bricklayer's Hammer.

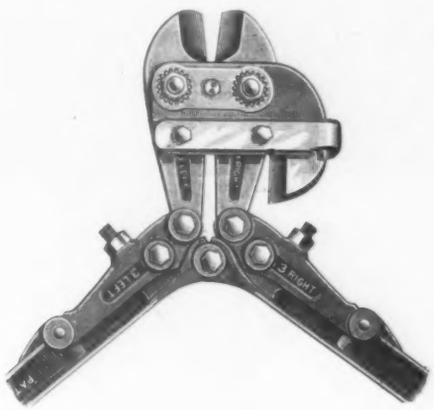
The David Maydole Hammer Company, Norwich, N. Y., has just put a new pattern of bricklayers' hammer on the market, as here shown. It is made in four numbers,

Bricklayers' Hammer.

561 to 564, inclusive, weighing, exclusive of handle, respectively, 2¼, 1⅞, 1⅞ and 1 pound. The hammer is of high grade material, with second growth hickory handle and adze eye, the main feature of this pattern being in the cutting end, which is straighter, so as to enable the workman to get in closer when working on a brick wall. The hammer proper is oil finished. Cased for shipment they weigh per dozen 37½, 32½, 26½ and 22 pounds, in the order named above.

Victor Combination Bolt Clipper and Shear.

Roberts Mfg. Company, Somerville, Mass., is making the combination bolt clipper and shear shown in the accompanying cut. It is 36 inches long and weighs 14½



Victor Combination Bolt Clipper and Shear.

pounds, only two pounds more than the regular Victor bolt clipper. The maker states that it will cut cleanly and easily ⅝-inch round and 1¼ x 5-16 flat Bessemer steel or iron and ⅝-inch wire cable. This tool differs from other styles of clippers manufactured by the company in having an equalizing device for keeping the jaws in place under any strain and the shears so placed as to form a top strap and a cutting blade. A special temper is required and furnished for cable cutting. The company states that this tool can be carried with one hand to any part of a construction job and will accomplish the work of tools aggregating five times its weight. It is furnished with a keeper, but can be used without it.

One-Minute Washer.

The washing machine shown herewith is the product of the Hawkeye Incubator Company, Newton, Iowa. The tubs are constructed of Southern cypress, kiln dried, each stave being curved and corrugated; 1½-inch steel hoops bind the staves at the top and bottom, and a round

One-Minute Washer.

iron hoop is also fastened about the center when mounting the casting. It is stated that all castings are of the best quality and reinforced with ribs at points of greatest strain. The dolly or clothes agitator is turned from hard maple and adjusts itself up or down to suit the amount of clothes being washed. Attention is called to the reciprocating motion developed by means of compound levers and to the ball bearing fly wheel under the tub, which prevents jerky, uneven running and reduces the labor of the operator.

The Myers Adjustable Tandem Stayon Flexible Door Hanger.

The accompanying cuts represent a door hanger put on the market by F. E. Myers & Bro., Ashland, Ohio. The hanger is supplied with steel roller bearings, and can be adjusted perpendicularly so as to locate the door at

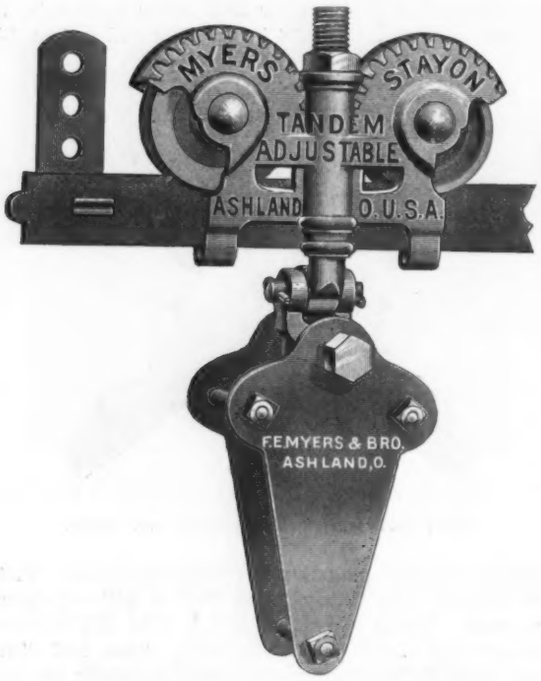


Fig. 1.—The Myers Adjustable Tandem Stayon Flexible Door Hanger.

any point above the ground, or laterally so as to adjust the door to or from the building, and will also adjust itself to any thickness of door. The perpendicular and lateral adjustments are made with an ordinary wrench and at the will of the user. In Fig. 1 a face view of the hanger is given, showing the manner in which the wheels

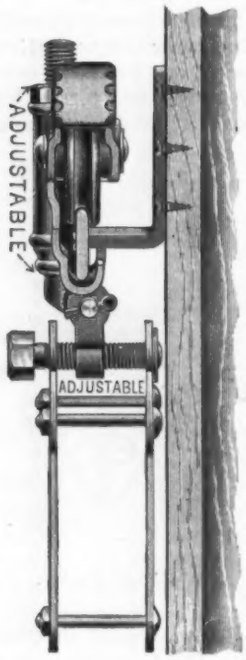
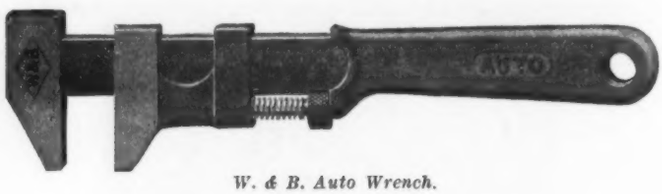


Fig. 2.—Edge View of Tandem Hanger.

are covered, the bracing of the frame and the stayon feature. The edge view, Fig. 2, shows the center bolt and nut, by means of which the door can be raised or lowered at either end independently, which is advantageous where the ground is heaved by frost. Fig. 2 also shows the cross bolt, by means of which the door can be adjusted to or from the building, and its adjustability for different thicknesses of doors.

W. & B. Auto Wrench.

The W. & B. Auto wrench, here shown, is manufactured by the Whitman & Barnes Mfg. Company, Chicago, Ill., and 111 Chambers street, New York, and is designed especially for automobile and other work where a thin, strong wrench is required. The jaws and head are thin, enabling the wrench to work in very close places and the



W. & B. Auto Wrench.

head and bar being drop forged in one solid piece gives the wrench great strength. It is fitted with the W. & B. indestructible iron handle, formed to fit the hand. The jaws of the wrench are case hardened, ground and polished and the whole tool is nicely finished.

Glascock Racers.

Glascock Bros. Mfg. Company, Muncie, Ind., manufactures children's hand cars called Glascock Racers, one style of which is illustrated herewith. Other designs include a special model for girls, a tandem and a junior, which is built for children under six years old. It is stated that great care is used in building these cars to protect their little operators. The front axles are made of square Bessemer steel with turned journals; the back axles of cold rolled steel with turned journals, so that the wheels will run true. The axles are connected by a strong reach piece of seasoned hard maple. The gear wheels are enclosed, preventing the possibility of

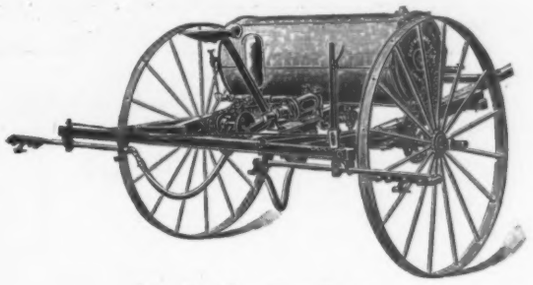
Glascock Racer, No. 1.

mashed fingers or torn clothing. Glascock Racers are said to be very easy running, having no dead center. They have rubber tires. Three different motions are possible, described as the rowing, the semi-rowing and the racing motions. All tend to improve the physical development of the child and are especially strengthening to the arms and shoulders. The cars are said to be handsomely finished, the axles and gear wheels being enameled by the baking process, while two coats of out door carriage varnish make all colors weather proof.

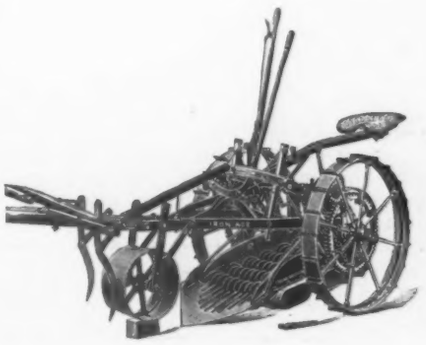
The copartnership of Thos. Henderson & Son, wholesale Hardware, Ashland, Ky., which has been in existence since January 4, 1884, has been succeeded by a corporation under the style of the Henderson Hardware Company, J. W. Henderson being president. The change was made simply for the convenience of doing business and does not involve any alteration in the *personnel* of the concern.

Iron Age Potato Machinery.

Bateman Mfg. Company, Grenloch, N. J., manufacturer of Iron Age garden implements, horse hoes, cultivators, &c., is now offering a complete line of potato machinery. Besides Iron Age potato planters and riding cultivators, which have been on the market for some time, the company makes the four-row sprayer and the digger shown in the accompanying cuts. The pump of the sprayer derives its power from the main axle by a sprocket driven by both wheels. A convenient clutch throws the pump in or out of gear. The plunger is slotted and the shaft is pivoted at the furthest end of the slot; therefore the plunger enters the chamber squarely, causing a minimum amount of friction and wear. The portion of the plunger entering the chamber is covered with brass tubing and passes through a brass gland, preventing rust or damaging effect from the solutions. The plunger does not work directly against the walls of the chamber, but against the packing, which may be renewed at any time as necessary. The iron tank holds about 55 gallons and is heavily galvanized after being made up. It contains dashers which keep the solution churned up and allow no gathering of sediment or undissolved material. The four rows of spraying nozzles are adjustable to various widths and hights, and come with one, two or even more in a row. The digger is shown in the plain or low down form, in which it would be generally used, but has an elevator attachment which can be quickly applied when the conditions require. The construction of the machine is said to be such that it requires only a minimum amount of power to operate the device employed to produce separation. The machine is light in draft and has good wearing qualities. As a low down digger it may be operated by a pair of horses of ordinary size; with the elevator attachment it can readily be handled by three horses. The company will be pleased to send to any one interested its 1906 catalogue containing full information in regard to its complete line of potato machinery.



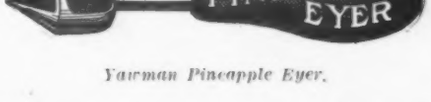
Iron Age Four-Row Sprayer.



Iron Age Potato Digger.

Yawman Pineapple Eyer.

The Yawman & Knapp Mfg. Company, Rochester, N. Y., represented by the Bridgeport Wire Goods Company, 82 West Broadway, New York, is introducing the Yawman pineapple eyer, here shown. It is designed for quickly and effectively removing the eyes from a peeled pineapple, without unnecessarily wasting the pulp. It is made of hardened steel, polished and nickeled and fitted with a white birch wood handle. The two cutting edges can be kept sharp by touching them up occasionally with a file or whetstone. The shape of the cutting member is such that only a certain amount of the fruit can be dug out, so that skill is not a factor in the operation. The eyers are attractively displayed on an easel card containing 12, for exhibit in the store.



Yawman Pineapple Eyer.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

	℔ gal.
Linseed, City, raw	42 @43
Linseed, City, Boiled	44 @45
Linseed, State and West'n, raw	40 @41
Linseed, raw Calcutta seed	@65
Lard, Extra Prime, Winter	65 @66
Lard, Extra No. 1	48 @49
Lard, No. 1	38 @40
Cotton-seed, Crude, f.o.b. mills	25½@26
Cotton-seed, Summer Yellow, Prime	31¾@32½
Cotton-seed, Summer Yellow, off grades	@..
Sperm, Crude	51 @..
Sperm, Natural Spring	@..
Sperm, Bleached Spring	@..
Sperm, Natural Winter	60 @63
Sperm, Bleached Winter	63 @64
Tallow, Prime	51 @53
Whale, Crude	31 @32
Whale, Natural Winter	38 @41
Whale, Bleached Winter	40 @42
Extra Bleached Winter	44 @46
Menhaden, Brown, Strained	26 @29
Menhaden, Light, Strained	27 @30
Menhaden, Bleached, Winter	32 @33
Menhaden, Ex-Bld., Winter	34 @35
Menhaden, Southern	@..

	℔ lb
Cocoanut, Ceylon	6¾@ 6½
Cocoanut, Cochin	7½@ 7¾
Cod, Domestic, Prime	32 @35
Cod, Newfoundland	35 @38
Red, Elaine	33 @35
Red, Saponified	4¾@ 4⅞
Olive, Italian, bbls	57 @60
Neatsfoot, prime	48 @49
Palm, Logos	6¼@ 6½

Mineral Oils—

	℔ gal.
Black, 29 gravity, 25@30 cold test	10½@11½
Black, 29 gravity, 15 cold test	11¼@12½
Black, Summer	10½@11¼
Cylinder, light filtered	18 @19
Cylinder, dark filtered	16 @17
Paraffine, 903-907 gravity	13½@14
Paraffine, 903 gravity	12½@13
Paraffine, 883 gravity	10¼@10¾
Paraffine, Red	12½@14

In small lots ½¢ advance.

Miscellaneous—

	℔	
Barytes:		
White, Foreign	ton	$17.50@19.00
Amer. floated	ton	17.00@19.00
Off color, No. 2	ton	13.50@15.00
Chalk, in bulk	ton	3.00@ 3.25
Chalk, in bbls	100 lb	....@ .35
China Clay, English	ton	12.00@17.00
Cobalt, Oxide	100 lb	2.50@ 2.60
Whiting, Common	100 lb	.43@ .48
Whiting, Gilders	100 lb	.50@ .55
Whiting, Ex. Gilders	100 lb	.55@ .60

Putty, Commercial—

	℔ 100 lb
In bladders	$1.70 @1.85
In bbls. or tubs	1.20 @1.40
In 1 lb to 5 lb cans	2.05 @2.95
In 12½ to 50 lb cans	1.50 @1.90

Spirits Turpentine—

	℔ gal.
In Oil bbls	73 @73½
In machine bbls	73½@74

Glue—

	℔ lb
Cabinet	11 @15
Common Bone	7 @ 9
Extra White	18 @24
Foot Stock, White	11 @14
Foot Stock, Brown	8 @11
German Hide	12 @18
French	10 @40
Irish	13 @16
Low Grade	9 @12
Medium White	14 @17

Gum Shellac—

	℔ lb
Bleached Commercial	@40
Bone Dried	@50
Button	42 @45
Diamond I	@65
Fine Orange	46 @60
A. C. Garnet	43 @..
D. C	60 @..
Octagon B	@52
T. N	44 @45
V. S. O	@55

Colors in Oil—

	℔ lb
Black, Lampblack	12 @14
Blue, Chinese	36 @46
Blue, Prussian	32 @36
Blue, Ultramarine	13 @16
Brown, Vandyke	11 @14
Green, Chrome	12 @16
Green, Paris	@24
Sienna, Raw	12 @15
Sienna, Burnt	12 @15
Umber, Raw	11 @14
Umber, Burnt	11 @14

White Lead, Zinc, &c.—

Lead, English white, in Oil.. ℔ lb 9½@ 9¾

Lead, American white, in Oil:

Lots of 500 lb or over	@ 7¼
Lots less than 500 lb	@ 7¾
In Barrels	@ 6¾
Lead, White, in oil, 25 lb tin pails, add to keg price	@ ⅛
Lead, White, in oil, 12½ lb tin pails, add to keg price	@ 1
Lead, White, in oil, 1 to 5 lb ass'ted tins, add to keg price	@ 1½

Lead, American. Terms: For lots 12 tons and over ¼¢ rebate; and 2% for cash if paid in 15 days from date of invoice; for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice, for lots of less than 500 lbs. net.

	℔ lb
Lead, White, Dry, in bbls	@ 6¾
Zinc, American, dry	4⅞@ 5

Zinc, French:

Paris, Red Seal, dry	9½
Paris, Green Seal, dry	10¾
Antwerp, Red Seal, dry	8¾
Antwerp, Green Seal, dry	10

Zinc, V. M. French, in Poppy Oil:

Green Seal:

Lots of 1 ton and over	12¾@13¾
Lots of less than 1 ton	13¼@13¾

Zinc, V. M. French, in Poppy Oil:

Red Seal:

Lots of 1 ton and over	11¾@12¼
Lots of less than 1 ton	11¾@12¾

Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or mixed grades. 1%: 25 bbls., 2%; 50 bbls., 4%.

Dry Colors—

	℔ lb
Black, Carbon	5 @10
Black, Drop, American	4 @ 6
Black, Drop, English	5 @15
Black, Ivory	16 @20
Lamp, Com	4½@ 6
Blue, Celestial	4 @ 6
Blue, Chinese	29 @32
Blue, Prussian	27 @30
Blue, Ultramarine	4½@15
Brown, Spanish	⅛@ 1
Carmine, No. 40	$3.30@3.40
Green, Chrome, ordinary	3½@ 6
Green, Chrome, pure	17 @25

Lead, Red, bbls., ½ bbls. and kegs:

Lots 500 lb or over	@ 7¼
Lots less than 500 lb	@ 7¾
Litharge, American, bbls	@ 7¼
Ocher, American	℔ ton $8.50@16.00
Ocher, American Golden	2½@ 3½
Ocher, French	1¾@ 2½
Ocher, Foreign Golden	3 @ 4
Orange Mineral, English	10 @12
Orange Mineral, French	10¾@12¼
Orange, Mineral, German	8¼@10
Orange, Mineral, American	8½@ 8¾
Red, Indian, English	4½@ 8½
Red, Indian, American	3 @ 3¾
Red, Turkey, English	4 @10
Red, Tuscan, English	7 @10
Red, Venetian, Amer.	℔ 100 lb $0.50@1.25
Red Venetian, English	100 lb $1.15@1.75
Sienna, Italian; Burnt and Powdered	3 @ 9¼
Sienna, Ital., Raw, Powd	3 @ 6½
Sienna, American, Raw	1½@ 2
Sienna, American, Burnt and Powdered	1½@ 2
Talc, French	℔ ton $15.00@30.00
Talc, American	℔ ton 15.00@25.00
Terra Alba, French	℔ 100 lb 90 @1.00
Terra Alba, English	℔ 100 lb 90 @1.00
Terra Alba, American, ℔ 100 lb, No. 1	70 @80
Terra Alba, American, ℔ 100 lb, No. 2	60 @65
Umber, T'key, Bnt. & Pow	2¼@ 3½
Umber, Turkey, Raw & Pow	2½@ 3½
Umber, Burnt, Amer	1¼@ 2
Umber, Raw, Amer	1¼@ 2
Yellow Chrome	12 @14
Vermilion, American Lead	10 @25
Vermilion, Quicksilver, bulk	@65
Vermilion, Quicksilver, bags	@62
Vermilion, English, Import	75 @90
Vermilion, Chinese	[illegible]

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓@33⅓& 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1905, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—
Domestic, ℔ doz. $3.00.....33⅓%
North's 10%
Zimmerman's—See Fasteners, Blind.

Window Stop—
Ives' Patent.....35%
Taplin's Perfection.....35%

Ammunition— See *Caps, Cartridges, Shells, &c.*

Anvils—American—
Eagle Anvils.....℔ lb 6¾@7 ¢
Hay-Budden, Wrought.....9@9¼ ¢
Horseshoe brand, Wrought.....9@9¼ ¢
Trenton .....℔ lb 9@9¼ ¢

Imported—
Peter Wright & Sons.....℔ lb 10½ ¢

Anvil, Vise and Drill—
Millers Falls Co., $18.00.....15&10%

Apple Parers— See *Parers, Apple, &c.*

Aprons, Blacksmiths'—
Livingston Nail Co.....33⅓%

Augers and Bits—
Com. Double Spur.....75@75&5%
Jennings' Patn., reg. finish.... 50&10@60%
Black Lip or Blued.....60&10%
Boring Mach. Augers.....70&10%
Car Bits, 12-in. twist.....50&10%
Ford's Auger and Car Bits.....40&5%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list..25%
No. 30, R. Jennings' list.....40&7½%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Millers Falls.....50&10&7½%
Ohio Tool Co.'s Bailey Augs. and Car Bits.....40&10%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist....60&10%
Wright's Jennings' Bits.....50%

Bit Stock Drills— See *Drills, Twist.*

Expansive Bits—
Clark's small, $18; large, $26....50&10%
Clark's Pattern, No. 1, ℔ doz. $26; No. 2, $18.....65%
Ford's, Clark's Pattern.....60&5%
C. E. Jennings & Co., Steer's Pat..25%
Swan's 60%

Gimlet Bits—
Per gro.
Common Dble. Cut....$3.00@3.85
German Pattern, Nos. 1 to 10, $4.60; 11 to 13, $5.75

Hollow Augers—
Bonney Pat., per doz..$5.50@6.00
Ames .....25&10%
Universal 20%
Wood's Universal.....25%

Ship Augers and Bits—
Ship Augers.....45&5@60%
Ford's .....33⅓@5%
C. E. Jennings & Co.:
L'Hommedieu's 15%
Watrous' .....35&5%
Ohio Tool Co.'s.....40%
Snell's 40%

Awl Hafts— See *Handles, Mechanics' Tool.*

Awls—
Brad Awls:
Handled .....gro. $2.75@3.00
Unhdled, Shldered...gro.63¢@66¢
Unhandled, Patent..gro.66@70¢
Peg Awls:
Unhandled, Patent..gro. 31@34¢
Unhdled, Shldered..gro. 65@70¢
Scratch Awls:
Handled, Com...gro. $3.50@4.00
Handled, Rocket..gro.$11.50@12.00
Hurwood 40%

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—
Single Bit, base weights:
First Quality.....$4.75@5.00
Second Quality.....$5.25@5.50
Double Bit, base weights:
First Quality.....$7.00@7.50
Second Quality.....$6.50@6.75

Axle Grease— See *Grease, Axle*

Axles— Iron or Steel
Concord, Loose Collar...1¼@1¾¢
Concord, Solid Collar...1¾@5¼¢
No. 1 Common, Loose...3¼@3¾¢
No. 1½ Com., New Style3¾@4¼¢
No. 2 Solid Collar.....4@4½¢
Half Patent:
Nos. 7, 8, 11 and 12....75@75&5%
Nos. 13 to 14.....70&10@75&5%
Nos. 15 to 18...75&10@75&10&5%
Nos. 19 to 22...75&10@75&10&5%

Boxes, Axle—
Common and Concord, not turned lb..4½@5¢
Common and Concord, turned. lb., 5½@6¢
Half Patent.....lb. 8½@9¢

Bait— Fishing—
Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

Balances— Sash—
Caldwell new list.....50%
Pullman .....50&10@60%

Spring—
Spring Balances.....50&10@60%
Chatillon's:
Light Spg. Balances.....40&10%
Straight Balances.....40%
Circular Balances.....50%
Large Dial.....30%

Barb Wire— See *Wire, Barb.*

Bars— Crow—
Steel Crowbars, 10 to 40 lb.... per lb., 3@3¼¢

Towel -
No. 10 Ideal, Nickel Plate..℔ gro. $8.50

Beams, Scale—
Scale Beams.....40&10@50%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.85; Tinned $1.00
No. 11 Wire Coppered ℔ doz. $1.10; Tinned $1.20
No. 10 Wire Galvanized..℔ doz. $1.75
Western W. G. Co.:
No. 1 Electric.....℔ gro. $7.80
No. 2 Buffalo.....℔ gro. $9.00
No. 3 Perfection Dust.....℔ gro. $8.00

Egg—
Holt-Lyon Co.:
Holt, No. A, Japanned....℔ doz. $1.20
Holt, No. 1, Tinned.....℔ doz. $1.50
Holt, No. B, Japanned....℔ doz. $2.00
Holt, No. 2, Tinned.....℔ doz. $2.25
Lyon, No. 2, Japanned....℔ doz. $1.25
Lyon, No. 3, Japanned....℔ doz. $1.50
Taplin Mfg. Co.: ℔ gro.
No. 60 Improved Dover.....$6.00
No. 75 Improved Dover.....$6.50
No. 100 Improved Dover.....$7.00
No. 102 Improved Dover, Tin'd..$8.50
No. 150 Improved Dover, Hotel..$15.00
No. 152 Imp'd Dover, Hotel, T'd.$17.00
No. 200 Imp'd Dover Tumbler....$8.50
No. 202 Imp'd Dover Tumbler, T'd.$9.50
No. 300 Imp'd Dover Mammoth, ℔ doz. $25.00
Western, W. G. Co., Buffalo.....$7.00
Wonder (R. M. Co.)..℔ gro. net, $6.00

Bellows—
Blacksmith, Standard List.. 60&10@70&10%

Hand—
Inch.. 6 7 8 9 10
Doz...$4.75 5.70 6.65 7.60 8.85

Molders—
Inch.. 9 10 11 12 14
Doz...$8.00 9.00 10.50 12.50 14.50

Net Prices.

Bells— Cow—
Ordinary goods...75&5@75&10&5%
High grade.....70&10@70&10&5%
Jersey .....75&10%
Texas Star.....50%

Door—
Abbe's Gong.....45%
Burton Gong.....50%
Home, R. & E. Mfg. Co.'s.....55&10%
Lever and Pull, Sargent's....60&10&10%
Trip Gong.....50&10@50&10&5%
Yankee Gong.....55%

Hand—
Hand Bells, Polished, Brass.60&10%
White Metal.....60%
Nickel Plated.....50&10&60%
Swiss .....60@60&7½%
Cone's Globe Hand Bells.....33⅓@35%
Silver Chime.....33⅓@35%

Miscellaneous—
Farm Bells.....lb. 2¼ ¢
Steel Alloy Church and School 50&10@60%
American Tube & Stamping Co. Gongs 75%
Table Call Bells.....50@50&10%

Belting— Leather—
Extra Heavy, Short Lap..60&5%
Regular Short Lap....60&10&5%
Standard 70%
Light Standard.....70&5%
Cut Leather Lacing.....50%
Leather Lacing Sides, per sq. ft. 25¢

Rubber—
Agricultural (Low Grade).... 75@75&5%
Common Standard....70@70&10%
Standard .....60&5@60&10%
Extra .....60@60&5%
High Grade.....50&5@50&10%

Bench Stops— See *Stops, Bench*

Benders and Upsetters, Tire—
Detroit Perfected Tire Bender.....40%
Detroit Stoddard's Lightning Tire Upsetters, No. 1, $4.25; No. 2, $7.25; No. 3, $10.50; No. 4, $16.25; No. 5, $20.50.
Green River Tire Benders and Upsetters 20%

Bicycle Goods—
John S. Leng's Son's 1902 list:
Chain 50%
Parts 50%
Spokes 50%
Tubes 60%

Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks— Tackle—
Common Wooden....70&10@75%
Hartz St. Tackle Blocks.....50@50&5%
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%;
Lane's Patent Automatic Lock and Junior 30%
Stowell's Novelty, Mal. Iron....50&10%
Stowell's Self Loading.....60%
See also Machines, Hoisting.

Boards, Stove—
Zinc, Crystal, &c...30&10@40&10%

Boards, Wash—
See *Washboards.*

Bobs, Plumb—
Keuffel & Esser Co.....33⅓%

Bolts—
Carriage, Machine, &c.—
Common Carriage (cut thread): ⅝ x 6 and smaller.....75@—%
Larger and Longer..65&5@—%
Phila. Eagle,$3.00 list May 24,'99 80%
Bolt Ends, list Feb. 14, '95.... 65&10@—%
Machine, ⅝ x 4 and smaller 75@—%
Machine, larger and longer.. 65&5@—%

Door and Shutter—
Cast Iron Barrel, Japanned, Round Brass Knob:
Inch..... 3 4 5 6 8
Per doz..$0.30 .35 .45 .60 .80
Cast Iron Spring Foot, Jap'd:
Inch..... 6 8 10
Per doz.....$1.20 1.50 2.25
Cast Iron Chain, Flat, Japanned:
Inch..... 6 8 10
Per doz.....$1.00 1.40 1.65
Cast Iron Flat Shutter, Jap'd., Brass Knobs:
Inch..... 6 8 10
Per doz.....$0.75 .95 1.25
Wrt Barrel Japd.....80@80&10%
Wrt " Bronzed....50@50&10%
Wrt. Spring...70&10@70&10&10%
Wrt. Shutter.....50&5@50&10&5%
Wrt. Square Neck.....75@75&10%
Wrt Square,66⅔&10@66⅔&10&10%
Ives' Patent Door.....60%

Plow and Stove—
Plow .....65&10@—
Stove .....87½&10@—

Tire—
Norway Iron.....80%
Norway Iron.....80%
American Screw Company:
Norway Phila., list Oct. 16, '84..80%
Eagle Phila., list Oct. 16, '84....82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Eclipse, list Dec. 28, '99.....80%
Mount Carmel Bolt Co.:
Norway Phila., list Oct. 16, '84....80%
Eagle Phila., list Oct. 16, '84....82½%
Mount Carmel, list Dec. 28, '99...80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct., '84.....80%
Upson Nut Co.:
Tire Bolts.....72½%

Borers, Tap—
Borers Tap, Ring, with Handle:
Inch..... 1¼ 1½ 1¾ 2
Per doz...$4.80 5.60 6.40 8.00
Inch 2¼ 2½
Per doz.....$6.65 11.50
Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each.....25%

Boxes, Mitre—
C. E. Jennings & Co.....30%
Langdon .....15&10%
Perfection 40%
Seavey 33⅓%
Stanley R. & L. Co.:
Nos. 240 to 460.....30%
Nos. 50 and 60.....35%

Braces—
Common Ball, American..$1.25@1.30
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 70 to 120, 81 to 123, 207 to 414 .....60%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat.60@60&5%
Stanley R. & L. Co.:
Stanley 35%
Victor 45%

Brackets—
Wrought Steel...80&10@80&10&5%
Griffin's Pressed Steel.....80@80&10%
Griffin's Folding Brackets.....70&10%
Stowell's Cast Shelf.....75%
Stowell's Sink.....50%
Western, W. G. Co., Wire.....60&10%

Bright Wire Goods— See *Wire and Wire Goods.*

Broilers—
Kilbourne Mfg. Co.....75&20%
Western, W. G. Co.....80%
Wire Goods Co.....75@75&10%

Buckets, Galvanized—
Price per dozen.

Quart.....	10	12	14
Water, Regular...	*1.40*	*1.70*	*1.90*
Water, Heavy....	*3.40*	*3.70*	*3.80*
Fire, Rd. Bottom..	*2.30*	*2.55*	*2.95*
Well	*2.55*	*2.87*	*3.15*

Bucks, Saw—
Hoosier.....℔ gro. $36.00

Bull Rings— See *Rings, Bull*

Butts— Brass—
Wrought, list, Sept., '96.15@—%
Cast Brass, Tiebout's.....50%

Cast Iron—
Fast Joint, Broad....40&10@50%
Fast Joint, Narrow....40&10@50%
Loose Joint.....70&10@75%
Loose Pin.....70&10@75%
Mayer's Hinges.....70@70&5%
Parliament Butts.....70@70&5%

Wrought Steel—
Table and Back Flaps...75%
Narrow and Broad.....75%
Inside Blind.....75%
Loose Pin.....75%
Loose Pin, Jap'd.....70&10%
Loose Pin, Ball and Steeple Tip 85%
Japanned Ball Tip Butts... 70&10%
Bronzed, Wrt., Nar. and Inside Blind Butts....55&10%

Net Prices.

Cages, Bird—
Hendryx, Brass:
3000, 5000, 1100 series.....5%
1200 series.....33⅓%
200, 300, 600 and 900 series.....40&10%
Hendryx Bronze:
700, 800 series.....40&10%
Hendryx Enameled.....40&10%

Calipers— See *Compasses.*

Calks, Toe and Heel—
Blunt, 1 prong.....per lb.14¢@14½¢
Sharp, 1 prong...per lb., 14½@15¢
Burke's Blunt.....4@4¼¢
Burke's Sharp.....4½@4¾¢

Gautier, Blunt....4@4¼¢
Gautier, Sharp....4¼@4¾¢
Perkins', Blunt Toe....₩ lb 3.65¢
Perkins', Sharp Toe....₩ lb 4.15¢

Can Openers—
See *Openers, Can.*

Cans, Milk—

	5	8	10 gal.
Illinois Pattern	$1.35	1.85	2.05 each.
New York Pattern	1.50	2.20	2.45 each.
Baltimore Pattern	1.50	2.20	2.45 each.
Dubuque	1.35	1.60	1.75 each.

Cans, Oil—
Buffalo Family Oil Cans:

3	5	10 gal.
$18.00	60.00	129.60 gro., net.

Caps, Percussion—
Eley's E. B....50@55¢
G. D....per M 34@35¢
F. L....per M 40@42¢
G. E....per M 48@50¢
Musket....per M 62@63¢

Primers—
Berdan Primers, $2 per M...20%
B. L. Caps (Sturtevant Shells) $2 per M....20%
All other primers per M. $1.50@1.60

Cartridges—
Blank Cartridges:
32 C. F., $5.50....10&5%
38 C. F., $7.00....10&5%
22 cal. Rim, $1.50....10&5%
32 cal. Rim, $2.75....10&5%
B. B. Caps, Con. Ball, Swgd. $1.90
B. B. Caps, Round Ball....$1.49
Central Fire....25%
Target and Sporting Rifle..15&5%
Primed Shells and Bullets. 15&10%
Rim Fire, Sporting....50%
Rim Fire, Military....15&5%

Casters—
Bed....70@70&10%
Plate....60&10@60&10&5%
Philadelphia....75@75&10%
Acme, Ball Bearing....33⅓%
Boss....70&10%
Boss Anti-Friction....70&10%
Gem (Roller Bearing)....80%
Martin's Patent (Phoenix)....45%
Standard Ball Bearing....45%
Tucker's Patent low list....30%
Yale (Double Wheel) low list....50%

Cattle Leaders—
See *Leaders, Cattle.*

Chain, Coil—
American Coil, Straight Link:

3-16	¼	5-16	⅜	7-16	½	9-16
$3.70	5.90	4.95	4.20	4.05	3.95	3.90
⅝	¾	⅞ to 1	1⅛ to 1¼ inch.			
$3.85	3.70	3.65	3.80			

German Coil....60&10&10@70%

Halter—
Halter Chains....60&5@60&10%
German Pattern Halter Chains, list July 24, '97....60&10&10%
Covert Mfg. Co, Halter....35&5%
Covert's Saddlery Works Halter....70%

Cow Ties—
See *Halters and Ties.*

Trace, Wagon, &c.—
Traces, Western Standard: 100 pr.
6½—6-3, Str'ght, with ring. $25.00
6½—6-2, Str'ght, with ring. $26.00
6½—8-2, Str'ght, with ring. $30.00
6½—10-2, Str'ght, with ring. $35.00
NOTE.—Add 2c per pair for Hooks. Twist Traces 2c per pair higher than Straight Link.
Eastern Standard Traces, Wagon Chain, &c....60&10%

Miscellaneous—
Jack Chain, list July 10, '93:
Iron....60&10&5@70%
Brass....60&10@60&10&10%
Safety Chain....75@75&10%
Gal. Pump Chain....lb. 4@4½%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion....40%
Covert Sad. Works:
Breast, Hold Back, Rein....70%
Oneida Community:
Am. Dog Leads and Kennel Chains, 40@40&5%
Niagara Dog Leads and Kennel Chains....45@60&5%
Wire Goods Co.:
Dog Chain....70&10%
Universal Dbl.-Jointed Chain....50%

Chain and Ribbon, Sash—
Oneida Community:
Copper Chain....60&5%
Steel Chain....60%
Pullman:
Bronze Chain....60%
Steel Chain....60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft....$1.25@$3.00
Sash Ribbon Attachments, per set..8¢

Chalk—(From Jobbers.)
Carpenters' Blue....gro. 38@40¢
Carpenters' Red....gro. 35@35¢
Carpenters' White....gro. 28@30¢
See also Crayons.

Checks, Door—
Bardsley's....45%
Eclipse....60&10%
Pullman, per gro....$54.00
Russwin....60%

Chests, Tool—
American Tool Chest Co.:
Boy's Chests, with Tools....55%
Youths' Chests, with Tools....40%
Gentlemen's Chests, with Tools..30%
Farmers' Carpenters', etc., Chests, with Tools....30%
Machinists' and Pipe Fitters' Chests, Empty....50%
Tool Cabinets....50%
C. E. Jennings & Co.'s Machinists' Tool Chests....33⅓&10%

Chisels—
Socket Framing and Firmer
Standard List....75@75&10%
Buck Bros....30%
Charles Buck....30%
C. E. Jennings & Co. Socket Firmer No. 10....60%
C. E. Jennings & Co. Socket Framing No. 15....60%
Ohio Tool Co.'s....70%
Swan's....75%
L. & I. J. White....30@30&5%
L. & I. J. White, Tanged....25&5%

Tanged—
Tanged Firmers....33 1-3@40%
Buck Bros....30%
Charles Buck....30%
C. E. Jennings & Co. Nos. 191, 181..25%

Cold—
lb.
Cold Chisels, good quality..13@15¢
Cold Chisels, fair quality..11@12¢
Cold Chisels, ordinary...9@10¢

Chucks—
Almond Drill Chucks....35%
Almond Turret Six-Tool Chuck....35%
Beach Pat., each $6.00....35&5%
Empire....25%
Blacksmiths'....25%
Jacobs' Drill Chucks....35%
Pratt's Positive Drive....25%
Skinner Patent Chucks:
Independent Lathe Chucks....40&10%
Universal, Reversible Jaws....40%
Combination, Reversible Jaws....40%
Drill Chucks, New Model....25%
Drill Chucks, Standard....40&10%
Drill Chuck, Skinner Pat....25%
Drill Chucks, Positive Drive....33⅓%
Planer Chucks....30%
Face Plate Jaws....40&10%
Standard Tool Co.:
Improved Drill Chuck....45%
Union Mfg. Co.:
Combination....50%
Czar Drill....35%
Combination, Geared Scroll....40%
Geared Scroll....40%
Independent....50%
Independent Steel....40%
Union Drill....45%
Universal....50%
Independent Iron F. Plate Jaws..40%
Independent Steel F. Plate Jaws..40%
Westcott Patent Chucks:
Lathe Chucks....50%
Little Giant Auxiliary Drill....50%
Little Giant Double Grip Drill..50%
Little Giant Drill, Improved....50%
Oneida Drill....50%
Scroll Combination Lathe....50%

Clamps—
Adjustable, Hammers'....20@20&5%
Cabinet, Sargent's....50&10%
Carriage Makers', P., S. & W. Co....40&10@50%
Carriage Makers', Sargent's....60%
Besly, Parallel....33⅓&10%
Lineman's, Utica Drop Forge & Tool Co....40%
Wood Workers, Hammers'....40&10%
Saw Clamps, see Vises, Saw Filers'.

Cleaners, Drain—
Iwan's Champion, Adjustable....55%
Iwan's Champion, Stationary....40%

Sidewalk—
Star Socket, All Steel..₩ doz. $4.05 net
Star Shank, All Steel..₩ doz. $3.24 net
W. & C. Shank, All Steel, ₩ doz., 7½ in., $3.00; 8 in., $3.25.

Cleavers, Butchers'—
Foster Bros....30%
New Haven Edge Tool Co.'s....45%
Fayette R. Plumb....30%
L. & I. J. White....30%

Clippers, Horse and Sheep—
Chicago Flexible Shaft Company:
'98 Chicago Horse, each....$8.75
1902 Chicago Horse, each..$10.75
20th Century Horse, each..$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each.$20.00
Stewart's Enclosed Gear Horse, each....$6.75
Stewart's Patent Sheep Shearing Machine, each....$12.75
} 20%

Clips, Axle—
Regular Styles, list July 1, '05. 80%

Cloth and Netting, Wire—See *Wire, &c.*

Cocks, Brass—
Hardware list:
Compression, Plain Bibbs, Globe, Kerosene, Racking, &c., Cocks....75@75&5%

Coffee Mills—
See *Mills, Coffee.*

Collars, Dog—
Nickel Chain, Walter B. Stevens & Son's list....40%
Leather, Walter B. Stevens & Son's list....40%

Combs, Curry—
Metal Stamping Co....40%

Mane and Tail—
Covert's Saddlery Works....60&10%

Compasses, Dividers, &c.
Ordinary Goods....75&5@75&10%
Bemis & Call Hdw. & Tool Co.:
Dividers....65%
Calipers, Double....65%
Calipers, Inside or Outside....65%
Calipers, Wing....60%
Compasses....50%
Wm. Schollhorn Co.:
Excelsior Dividers....60%
Lodi Dividers....75%

Conductor Pipe,—
L. C. L. to Dealers:

Territory:	Galvanized Steel.	Charcoal Iron.	Copper.
Eastern:			
	70&10 %	60&7½%	50%
Central:			
	70& 2½%	60 %	40&10&5%
Western and S. W.:			
	65&10 %	50&10&2½%	47½%
So. Western			
	62½&7½%	50&5%	40&10%
	Copper.		14x16 oz.
Eastern			....50&10%
Central			....50&7½%
Southern			....50&5%
So. Western			....50&2½%

Terms, 60 days; 2% cash 10 days. Factory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

Gal, each..	2	3	4	6	8
Labrador	$1.20	$1.50	$1.80	$2.10	$2.70
Gal	3	4	6	8	
Iceland, ea.	$1.80	$2.10	$2.40	$3.00	
Gal	2	3	4	6	8
Galvanized, ea.	$1.85	$2.00	$2.25	$2.90	$3.90
Galvanized, Lined, side handles, Gal	2	3	4	6	8
Each	$1.95	$2.15	$2.40	$3.30	$4.15
White Enameled					25%
Agate Lined					25%

Coopers' Tools—
See *Tools, Coopers'.*

Coppers' Soldering—
Soldering Coppers, 3 lbs. to pair and heavier, 25@24¢; lighter than 3 lbs. to pair....25@26¢

Cord—Sash—
Braided, Drab....lb. 35¢
Braided, White, Com., Nos. 8 to 12, 24¢; No. 7, 21½¢; No. 6, 25½¢.
Cable Laid Italian....lb., A, 18¢; B, 16¢
Common India....lb. 10@10½¢
Cotton Sash Cord, Tw'ted. 17@19¢
Patent Russia....lb....@14¢
Cable Laid Russia....lb....@15¢
India Hemp, Braided..lb....@18¢
India Hemp, Twisted..lb. 12@13¢
Patent India, Twisted..lb. 12@13¢
Anniston Cordage Co.: ₩ lb, solid Braided, Nos. 8 to 12, $0.24; No. 7, $0.21½; No. 6, $0.25½; ₩ doz., 50 ft., Oriole, $2.00; 50 ft., Columbia, $0.85; 50 ft., Victors, $1.00; 50 ft., 6-Thread, $1.10; 60 ft., 3-Thread, $0.95; 50 ft., Manila, $1.40; 60 ft., Jute, $0.75.
Pearl Braided, cotton, No. 6, ₩ lb, 25½¢; No. 7, 25¢; Nos. 8 to 12, 24½¢
Eddystone Braided, Nos. 6, 9 and 10, 25¢; 7, 25½¢; 6, 26½¢.
Harmony Cable Laid Italian, Nos. 7 to 10....₩ lb 23 ¢
Peerless:
Cable Laid Itallan....16 ¢
Cable Laid Russian....14 ¢
Cable Laid India....12 ¢
Braided India....18 ¢
Pullman:
Wire Sash Cord....10%
Sash Cord Attachments, per doz..10¢
Samson, Nos. 8 to 12:
Braided, Drab Cotton....₩ lb 40 ¢
Braided, Italian Hamp....₩ lb 40 ¢
Braided, Linen....₩ lb 55 ¢
Braided, White Cotton or Spot....₩ lb 35 ¢
Massachusetts, White....₩ lb 30 ¢
Massachusetts, Drab....₩ lb 35 ¢
Phoenix, White, Nos. 8 to 12, 27¢; No. 7, 27½¢; No. 6, 28½¢.
Silver Lake:
A, Drab....45 ¢
A, White....40 ¢
B, Drab....40 ¢
B, White....35 ¢
Italian Hemp....40 ¢
Linen....37½¢
See also Chain and Ribbon.

Wire, Picture—
List Oct., '00....85&10&10@85&10&10&5%
Hendryx Standard Wire Picture Cord, 85&10%

Cradles—
Grain....40&12½%

Crayons—
White Round Crayons, gr. 6@6½¢
Cases, 100 gro., $5.00 at factory.

D. M. Steward Mfg. Co.: } Case lots, 20%

Genuine.	Per gro.
Round Pencil, $2.25; Square Pencil, $1.75; Flat Crayon, $2.50; Metal Workers' Crayon, $3.00; Rolling Mill Crayon, $3.00.	

} Case lots, 50&20%

Compo.	Per gro.
Round Pencil, $1.50; Square Pencil, $1.50; Flat Crayon, $1.50; Metal Workers' Crayon, $2.50; Rolling Mill Crayon, $2.50; Railroad Crayon, $4.00; Compo. Crayon, $4.00.	

Zelnicker's Lumber:
Red, Blue, Green....₩ gro. $6.50
Black....₩ gro. $4.00
See also Chalk.

Crooks, Shepherds'—
Fort Madison, Heavy....₩ doz. $7.00
Fort Madison, Light....₩ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—
Victor Garden....50%

Cutlery, Table—
International Silver Company:
No. 12 M'd'm Knives, 1847....₩ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor....₩ doz. $3.00
Wm. Rogers & Son....₩ doz. $2.50

Cutters—Glass—
H. H. Mayhew Co....40%
Red Devil....50%
Smith & Hemenway Co....50%
Woodward....40%

Meat and Food—
American....30%

Nos.	1	2	3	4	B	6
Each	$5	$7	$10	$25	$50	$60

Enterprise....25@25&7½%

Nos.	5	10	12	22	32
Each	$2	$3	$2.75	$4.50	$6

Dixon's....₩ doz. 40@50%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Ideal....40&10@50%
Little Giant....₩ doz. 40@50%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$72.00	$68.00

N. E. Food Choppers....25%
New Triumph No. 605, ₩ doz. $24.00....40@50%
Russwin Food, No. 1, $24.00; No. 2, $27.00....45&10&10%
Woodruff's....₩ doz. 40@50%

Nos.	100	150
	$15.00	$18.00

Enterprise Beef Shavers....25@30%

Slaw and Kraut—
Henry Disston & Sons:
Slaw, Corn Grater, &c....40%
Kraut Cutters, 21 x 7, 26 x 8, 30 x 9....55%
Kraut Cutters, 36 x 12, 40 x 12....40%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....₩ doz. $3.00
Combined Slaw Cutter and Corn Grater....₩ doz. $4.00
Tucker & Dorsey Mfg. Co.:
Kraut Cutters....40%
Slaw Cutters, 1 Knife..₩ gr. $18@$20
Slaw Cutters, 2 Knife..₩ gr. $22@$30

Tobacco—
All Iron, Cheap..doz. $4.25@$4.50
Enterprise....25@30%
National, ₩ doz., No. 1, $21; No. 2, $18....40%
Sargent's, ₩ doz., No. 2....60%
Sargent's, Nos. 12 and 21....60&10%

Washer—
Appleton's, ₩ doz., $16.00....50&10&10%

Diggers, Post Hole, &c.—
Dalbey Post Hole Auger..per doz., $9.00
Iwan's Imp'ved Post Hole Auger..40&5%
Iwan's Vaughan Pattern Post Hole Augers....₩ doz. $6.25
Iwan's Perfection Post Hole Digger..₩ doz. $8.25
Iwan's Split Handle Post Hole Diggers....₩ doz. $7.25
Kohler's Universal....₩ doz. $14.00
Kohler's Little Giant....₩ doz. $12.00
Kohler's Hercules....₩ doz. $10.00
Kohler's Invincible....₩ doz. $9.00
Kohler's Rival....₩ doz. $8.00
Kohler's Pioneer....₩ doz. $7.00
Never-Break Post Hole Diggers, ₩ doz., $24.00....50%
Samson, ₩ doz. $34.00....25%

Dividers—See *Compasses.*

Drawers, Money—
Tucker's Pat. Alarm Till No. 1, ₩ doz., $18; No. 2, $15; No. 3, $12; No. 4, $18.

Drawing Knives—
See *Knives, Drawing.*

Dressers, Emery Wheel—
Diamond Emery Wheel Dressers....35%
Diamond Wheel Dresser Cutters....35%

Drills and Drill Stocks—
Common Blacksmiths' Drill, each....$1.50@$1.75
Breast, Millers Falls....15&10%
Breast, P., S. & W....40%
Goodell Automatic Drills..40&5@40&10%
Johnson's Automatic Drills, Nos. 2 and 3....16⅔%
Johnson's Drill Points....16⅔%
Millers Falls Automatic Drills..33⅓&10%
Ratchet, Curtis & Curtis....25%
Ratchet, Parker's....40%
Ratchet, Weston's....40%
Ratchet, Weston's, Style H Improved....40%
Ratchet, No. 012....40%
Ratchet, Whitney's, P., S. & W..50%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00....33⅓%

Twist Drills—
Bit Stock....60&10&10@70%
Taper and Straight Shank....60&10@60&10&5%

Drivers, Screw—
Screw D'ver Bits, per doz..45@50¢
Balsey's Screw Holder and Driver, ₩ doz., 2½-in., $6; 4-in., $7.50; 6-in., ₩....50%
Buck Bros.' Screw Driver Bits....30%
Champion....50%
Edson....60%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Gay's Double Action Ratchet....35%
Goodell's Auto..50&10&10@50&10&10&5%
Hurwood....40%
Mayhew's Black Handle....40%
Mayhew's Monarch....40&10%
Millers Falls, Nos. 20 and 21....25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
New England Specialty Co....50&10%
Sargent & Co.'s:
Nos. 1 and 60....50&10&10%
Nos. 50, 53 and 55....60&10%
Nos. 20 and 40....70&10%
Smith & Hemenway Co....40&5%
H. D. Smith & Co.'s Perfect H'dle..40%
Stanley R. & L. Co.'s:
No. 64, Varn. Handles....65%
No. 86....75%
Victor....55%
Defiance....70%
Swan's:
Nos. 7565 to 7568....50%
No. 7540....40&10%

Eave Trough, Galvanized—

Territory.	L. C. L. Galvanized Galv. Steel.	Charcoal Iron.	Copper.
Eastern:			
	80&2½%	70&7½%	50%
Central:			
	75&10&7½%	70%	40&10&5%
Western and S. W.:			
	70&20&7½%	60&15&2½%	47½%
So. Western:			
	70&20%	65&2½%	40&10%

Terms.—2% for cash. Factory shipments generally delivered.
See also Conductor Pipe and Elbows.

Elbows and Shoes—
Factory shipments, all territories:

Galv. Steel and Galv. C. I. Gauge	
No. 26	60&10%
No. 24	50%
No. 22	25%
Copper	10%
	50%

Elbows, Stove Pipe—
Dover, one piece....40%
Perfect Elbows (R. M. Co.)....40%

Emery, Turkish—

	¼ to 46	5½ to 220	Flour.
Kegs....lb.	5 ¢	5½¢	5½¢
½ Kegs....lb.	5¼¢	5¾¢	5¾¢

¼ Keys.....lb. 5½¢ 6 ¢ 4 ¢
10-lb. cans, 10 in case....6½¢ 7 ¢ 6 ¢
10-lb. cans, less than 10.....10 ¢ 10 ¢ 8 ¢
Less quantity..10 ¢ 10 ¢ 8 ¢
NOTE.—In lots 1 to 3 tons a discount of 10% is given.

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Zimmerman's .....50&10%
Waring's .....40&10%

Cord and Weight—
Ives 40%

Faucets—
Cork Lined.....50@50&10%
Metallic Key, Leather Lined..60&10@70%
Red Cedar.....40&10@50%
Petroleum.....70&10@75%
B. & L. B. Co.:
Metal Key.....60&10%
Star 60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I. X. L. Cork Lined...50%
John Sommer's Reliable Cork Lined..50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
McKenna, Brass:
Burglar Proof, N. P.....25%
Improved, ¾ and ⅞ inch.....25%
Self Measuring:
Enterprise, ₱ doz. $36.00.....40&10%
Lane's, ₱ doz. $36.00.....40&10%
National Measuring, ₱ doz. $36.40&10%

Felloe Plates—
See *Plates, Felloe.*

Files— Domestic—
List revised Nov. 1, 1899.
Best Brands.....70&10@75&10%
Standard Brands.75&10@75&10&10%
Lower Grade....75&10&10@80&10%

Imported—
Stubs' Tapers, Stubs' list, July 24, '97.....$3 1-3@40%

Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103.....$3.75
Special, No. 104.....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

Grindstone—
Net Prices:

Inch	*15*	*17*	*19*	*21*
Per doz	$3.25	3.75	4.25	4.75

P., S. & W. Co.....30&10@40%
Reading Hardware Co.....60%
Swigart's 70%
Stowell's Giant Grindstone Hanger.. ₱ doz. $6.00
Stowell's Grindstone Fixtures, Extra Heavy .....50&10&10%
Stowell's Grindstone Fixtures, Light..60&10%

Fodder Squeezers—
See *Compressors.*

Forks—
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66%
Victor, Header.....66%
Champion, Hay.....65%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley.....40%
Plated.—See Spoons.

Frames— Saw—
White, S'g't Bar, per doz..75@80¢
Red, S'g't Bar, per doz...$1.00@1.25
Red, Dbl. Brace, per doz.$1.40@1.50

Freezers, Ice Cream—

Qt.	*1*	*2*	*3*	*4*	*6*
Each	$1.30	$1.60	$1.90	$2.20	$2.80

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse— *Per 1000 Feet.*
Hemp $2.75
Cotton 3.20
Waterproof Sgl. Taped.. 3.65
Waterproof Dbl. Taped.. 4.40
Waterproof Tpl. Taped.. 5.15
} 10&2½%

Gates, Molasses and Oil—
Stebbins' Pattern.....80&10%

Gauges—
Marking, Mortise, &c..50&10@60%
Chapin-Stephens Co.:
Marking, Mortise, &c.50&10@50&10&10%
Scholl's Patent.....50&10@50&10&10%
Door Hangers.....50@50&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge.....35%
Marking and Mortise.....60%
Wire, Brown & Sharpe's.....25%
Wire Morse's.....25%
Wire, P., S. & W. Co.....33⅓%

Gimlets— Single Cut—
Numbered assortments, per gro.
Nail, Metal, No. 1, $2.00; 2, $2.30
Spike, Metal, No. 1, $4.00; 2, $4.30
Nail, Wood Handled, No. 1, $2.50; 2, $2.80
Spike, Wood Handled, No. 1, $4.30; 2, $4.60

Glass, American Window
See *Trade Report.*

Glasses, Level—
Chapin-Stephens Co.....60@60&10&10%

Glue, Liquid Fish—
Bottles or Cans, with Brush..25&10@50%
International Glue Co. (Martin's)..40%

Grease, Axle—
Common Grade....gro. $4.50@6.00
Dixon's Everlasting..10-lb pails, ea. 85¢
Dixon's Everlasting, in boxes, ₱ doz. 1 lb, $1.20; 2 lb, $2.00
Helmet Hard Oil.....25%

Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

Grindstones—
Bicycle Emery Grinder.....$6.50
Bicycle Grindstones, each.....$2.50@3.00
Pike Mfg. Co.:
Improved Family Grindstones, per inch, ₱ doz.....$2.00
Pike Mower and Tool Grinder, each $6.00
} 33⅓%
Velox Ball Bearing, Mounted, Angle Iron Frames, each.....$3.00

Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

Halters and Ties—
Cow Ties.....60&10@60&10&5%
Covert Mfg. Co.:
Web 45%
Jute Rope.....45%
Sisal Rope.....33⅓%
Cotton Rope.....45%
Hemp Rope.....45%
Covert's Saddlery Works:
Web and Leather Halters.....70%
Jute and Manila Rope Halters....70%
Sisal Rope Halters.....60&20%
Jute, Manila and Cotton Rope Ties 70%
Sisal Rope Ties.....60&10%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters..45@50&5%
Niagara Cow Ties....45&5@50&10&5%
E. T. Rugg & Co.:
Leather Halters.....50%
Web Halters and Webbing.....60%
Jute and Sisal Rope Halters.....60%
Jute and Sisal Horse and Cattle Ties 60%
Cotton Horse Ties.....60%
Livery Ties, Braided.....60%

Hammers—
Handled Hammers—
Heller's Machinists'...40&10@40&10&10%
Heller's Farriers.....40&10@40&10&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75.....50%
Peck, Stow & Wilcox, Steel.....50%
Fayette R. Plumb:
Plumb, A. E. Nail.....33⅓&7½@33⅓&10&7½%
Engineers' and R. S. Hand.....50&7½&5@50&10&7½&5%
Machinists' Hammers.50&5@50&10&5%
Riveting and Tinners' .....40&2½@40&10&2½%
Sargent's C. S. New List.....40%

Heavy Hammers and Sledges—
Under 3 lb., per lb., 50¢...80&10%
3 to 5 lb., per lb., 40¢....80&10%
Over 5 lb., per lb., 30¢..80&10&10%
Wilkinson's Smiths'...lb. 9½@10¢

Handles—
Agricultural Tool Handles
Axe, Pick, &c....60&10@60&10&5%
Hoe, Rake, &c.....45@50%
Fork, Shovel, Spade, &c.:
Long Handles.....45@50%
D Handles.....50@50&5%

Cross-Cut Saw Handles—
Atkins' 40%
Champion .....45@45&10%
Disston's 50%

Mechanics' Tool Handles—
Auger, assorted...gro. $2.50@$3.00
Brad Awl.....gro. $1.65@$1.75
Chisel Handles:
Apple Tanged Firmer, gro. assorted .....$2.40@$2.65
Hickory Tanged Firmer, gro. assorted .....$2.15@$2.40
Apple Socket Firmer, gro. assorted .....$1.75@$1.95
Hickory Socket Firmer, gro. assorted .....$1.45@$1.60
Hickory Socket Framing, gro. assorted .....$1.60@$1.75
File, assorted.....gro. $1.30@$1.40
Hammer, Hatchet, &c. 60&10@60&10&5%
Hand Saw, Varnished, doz. 80&85¢; *Not Varnished*...65@75¢
Plane Handles:
Jack, doz. 30¢; *Jack, Bolted.*75¢
Fore, doz. 45¢; *Fore, Bolted.*90¢
Chapin-Stephens Co.:
Carving Tool.....40@40&10%
Chisel .....65@65&10%
File and Awl.....65@65&10%
Saw and Plane.....40@40&10%
Screw Driver.....40@40&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.. ₱ gro. $0.85@$1.50

Hangers—
NOTE.—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c
Allith Mfg. Co.:
Reliable, No. 1.....per doz. $3.00
Reliable, No. 2.....per doz. $2.00
Chicago Spring Butt Co.:
Friction 25%
Oscillating 25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator 30%
Railroad 50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00.....70%
Roller Bearing, No. 11, $15.00.70%
Roller Bearing, Ex. Hy., No. 22, $18.00.....70%
Hinged Hangers, $16.00....60&10%
Lane Bros. Co.:
Parlor, Ball Bearing.....$4.00
Parlor, Standard.....$3.15
Parlor, No. 105.....$2.85
Parlor, New Model.....$2.80
Parlor, New Champion.....$2.25
Barn Door, Standard.....60&5%
Hinged.....net $6.40
Covered .....60&2%
Special .....70&5%
Lawrence Bros.:
Advance .....60&10%
Cleveland 75%
Clipper, No. 75.....60%
Crown .....60&10%
Easy Parlor Door, Dbl. Sets, $2.50; Single Sets, $1.25.
Giant .....60&5%
Hummer .....70&5%
New York.....60&10%
Peerless 75%
Sterling .....60&10%
McKinney Mfg. Co.:
No. 1, Special, $15.....60&10%
No. 2, Standard, $18.....60&10%
Hinged Hangers, $16.....50%
Meyers' Stayon Hangers.....60&5%
Richards Mfg. Co.:
Pioneer Wood Track No. 3..$2.00
Ball B'r'g St'l Track No. 10,50&10%
Roller B'r'g St'l Track No. 12.$2.15
Roller B'r'g St'l Track No. 13.$2.30
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&10%
Trolley B. D. No. 17.....$1.25
Trolley F. D. No. 120.....$2.10
Trolley F. D. No. 121.....$2.25
Trolley F. D. No. 150.....$2.35
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 1, 2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&10%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.00
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24.....$1.30
Trolley B. D. No. 27.....$1.40
Trolley B. D. No. 28.....$1.60
Roller Bearings Nos. 39, 41, 43 .....75%
Anti-friction No. 42.....60&20%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Safety Door Hanger Co.:
Storm King Safety.....60%
U. S. Standard Hinge.....60%
Stowell Mfg. & Foundry Co.:
Acme Parlor Ball Bearing....40%
Ajax Hinge Door.....60%
Apex Parlor Door.....50&10&5%
Atlas 60%
Baggage Car Door.....50%
Climax Anti-Friction.....50&10%
Elevator 40%
Express 50%
Freight Car Door.....60%
Interstate .....60&10%
Lundy Parlor Door.....50&10%
Magic 60%
Matchless .....60&10%
Nansen .....70&5%
Parlor Door.....50&10%
Railroad .....50&10%
Rex Hinge Door.....60%
Street Car Door.....50%
Steel, Nos. 300, 400, 500....50&10%
Underwriters' Fire Door.....40%
Wild West Warehouse Door..50%
Zenith for Wood Track....50&10%
A. L. Sweet Iron Works:
Check Back.....70%
Climax Anti-Friction.....50&10%
Eagle 70%
Hylo Hinge.....60%
New Perfection.....60%
Pilot 60%
Pilot Hinge.....60%
Rider Wooster.....65%
Western Pattern.....70%
Taylor & Boggis Foy Co.'s Kidder's Roller Bearing.50&15&10&5%
Wilcox Mfg. Co.:
Bike Roller Bearing..₱ doz. $5.00
C. J. Roller Bearing.....60&10%
Cycle Ball Bearing.....50%
Dwarf Ball Bearing.....40%
Ives, Wood Track.....60&10%
L. T. Roller Bearing....60&10&5%
New Era Roller Bearing..50&10%
O. K. Roller Bearing..60&10&5%
Prindle, Wood Track.....60%
Richards' Wood Track.....60%
Richards' Steel Track.....50&10%
Spencer Roller Bearing....60&10%
Tandem, Nos. 1 and 2.....60%
Underwriters' Roller Bearing..40%
Velvet 50%
Wilcox Auditorium Ball B'r'g..20%
Wilcox Barn Trolley No. 125..40%
Wilcox Elv. Door, Nos. 112 and 122¼.....50%
Wilcox Elv. Door, No. 132.....40%
Wilcox Fire Trolley, Roller Bearing.....30%
Wilcox Le Roy Noiseless Ball Bearing 40%
Wilcox New Century..50&10&10%
Wilcox O. K. Steel Track....50%
Wilcox O. K. Trolley.....50%
Wilcox Trolley Ball Bearing..40%
Wilcox Wideman Narrow Gauge Ball Bearing.....40%
For Track, see Rail.

Extra 5&10% often given.

Hangers— Garment—
Pullman Trouser, ₱ gro., 1 pair Flat Aluminoy, $9.00; 1 pair Round Nickeled, $9.00; 4 pair Round Nickeled.. $27.00
Victor Folding.....₱ gro. $9.00
Western, W. G. Co.....70&10%

Gate—
Myers' Patent Gate Hangers, ₱ doz. net $4.50

Joist and Timber—
Lane Bros. Co.....30%

Hasps—
Griffin's Security Hasp.....50%
McKinney's Perfect Hasp, ₱ doz..50%

Hatchets—
Regular list, first quality....50%
Second quality $1.00 per doz. less than first quality.

Heaters, Carriage—
Clark, No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No. 3E, $3.25; No. 1, $3.50.....15%
Clark Coal, ₱ doz. $0.75.....10%

Hinges—
Blind and Shutter Hinges—
Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	*1*	*3*	*5*
Doz. pair	$0.75	1.35	2.70

Mortise Shutter: (L. & P., O. S., Dixie, &c.)

No.	*1*	*1½*	*2*	*2½*
Doz. pair	$0.70	.65	.60	.55

Mortise Reversible Shutter (Buffalo, &c.):

No.	*1*	*1½*	*2*
Doz. pair	$0.70	.65	.60

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.:
Hale & Benjamin Automatic Blind Hinges 20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Sargent's, Nos. 1, 3, 11 and 13..75&10%
Stanley's Steel Gravity Blind Hinges, ₱ doz. sets, without screws, $0.90; with screws, $1.20.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&10&5%
Acme, Lull & Porter.....75&10%
Queen City Reversible.....75&10%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&10&5%
1868, Old Pat'n, Nos. 1, 3 & 5.....75&10&5%
Tip Pat'n, Nos. 1, 3 & 5.....75&10&5%
Buffalo Gravity Lockin_ Nos. 1, 3 & 5.....75&10&5%
Shepard's Double Locking, Nos. 20 & 25.....70%
Champion Gravity Locking, No. 75.75%
Steamboat Gravity Locking, No. 10.75%
Pioneer, Nos. 060, 45 & 5½.....75%
Empire, Nos. 101 & 103.....70%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60%

Gate Hinges—
Clark's or Shepard's—Doz. sets:

No.	*1*	*2*	*3*
Hinges with L't'chs.	$2.00	2.70	5.00
Hinges only.....	1.40	2.05	3.80
Latches only.....	.70	.70	.85

New England:
With Latch.....*doz.* ....@$2.00
Without Latch...*doz.* ....@$1.60
Reversible Self-Closing:
With Latch.....*doz.* ....@$1.75
Without Latch...*doz.* ....@$1.35
Western:
With Latch.....*doz.* $1.75
Without Latch.....*doz.* $1.15
Wrightsville Hardware Co.:
Shepard's or Clark's, doz. sets.

Nos.	1	2	3
Hinges with Latches.	$2.00	2.70	5.00
Hinges only.....	1.40	2.05	3.80
Latches only.....	.70	.70	1.35

Pivot Hinges—
Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....45%

Spring Hinges—
Holdback, Cast Iron...$6.50@$7.00
Non-Holdback, Cast Iron$6.25@$6.75
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....45%
Bardsley's Patent Checking..15%
Bommer Bros.:
Bommer Ball Bearing Floor Hinges 40%
Bommer Spring Hinges.....40%
No. 999 Wrot, Steel Hold Back, ₱ gr. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor Hinge 50%
Garden City Engine House....25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American 30%
Columbia, No. 14.....₱ gr. $9.00
Columbia, No. 18.....₱ gr. $25.00
Columbia, Adjustable, No. 7, ₱ gr. $12.00
Gem, new list.....30%
Clover Leaf.....₱ gr. $12.00
Oxford, new list.....30%
Lawson Mfg. Co., Matchless....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges 40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....₱ gr. $9.00
Ball Bearing Floor Hinge...50%
Ohio Detachable Screen Door Hinge .....₱ gr. $12.00
The Stover Mfg. Co.:
Ideal, No. 16, Detachable, ₱ gr. $12.50
Ideal, No. 4.....₱ gr. $9.00
New Idea No. 1.....₱ gr. $9.00
New Idea, Double Acting....45%
New Idea Floor.....45%
Van Wagoner:
Ball Bearing.....25%
No. 777 Sh't Steel Holdb'k..₱ gro or.$9

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—
Strap and T Hinges, &c., list December 20, 1904:
Light Strap Hinges...70%
H'vy Strap H'g's...75&5%
Light T Hinges.....65%
Heavy T Hinges.....60%
Extra H'y T H'g's.70&10%
Hinge Hasps.....50%
Cor. Heavy Strap...75&5%
Cor. Ex. Heavy T.70&10%
Extra 10@10&5%
Screw Hook and Strap. { *6 to 12 in. .lb .3¾¢* / *1½ to 20 in. .lb .3½¢* / *22 to 36 in. .lb .3¼¢*
Screw Hook and Eye:
¾ to 1 inch.....lb.6½¢
⅝-inch.....lb.7½¢
½-inch.....lb.8½¢

Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

Hods— Coal—

	Per doz.			
Inch	*15*	*16*	*17*	*18*
Galv. Open	*$2.50*	*2.75*	*3.00*	*3.25*
Jap. Open	*$1.90*	*2.10*	*2.25*	*2.55*
Galv. Funnel	*$3.00*	*3.30*	*3.60*	*3.90*
Jap. Funnel	*$2.45*	*2.65*	*2.85*	*3.30*

Masons' Etc.—
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $0.95
Steel Mortar, No. 158.....each $1.25

Hoes— Eye—
Scovil and Oval Pattern.....
60&10@60&10&10%
Grub, list Feb. 23, 1899.....
70&10@75&10%
D. & H. Scovil.....33⅓%

Handled—
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Cronk's Weeding No. 1, $2.00; No. 2, $2.25
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ℔ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....℔ doz. 66⅔%
Junior Size.....℔ doz. $4.00
Ft. Madison Sprouting Hoe..℔ doz. 50%
Ft. Madison Dixie Tobacco Hoe.....
75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.15
B. B., 6½ in.....$3.35
Acme Wedding.....℔ doz., net, $4.35
W. & C. L'tning Shuffle Hoe, ℔ doz.$4.85

Hoisting Apparatus—
See *Machines, Hoisting.*

Holders— Bit—
Angular, ℔ doz. $24.00.....45&10%

Door—
Bardsley's.....45%
Empire.....50%
Pullman.....60%
Superior.....33⅓%

File and Tool—
Nicholson File Holders and File Handles.....33⅓&40%

Fruit Jar—
Triumph Fruit Jar Holder, ℔ gross, $10.80; ℔ doz.....$1.25

Hones—Razor—
Pike Mfg. Co., Belgian, German and Swaty.....50%

Hooks—Cast Iron—
Bird Cage, Reading.....40%
Bird Cage, Sargent's List.....60&10%
Ceiling, Sargent's List, Nos. 29, 32, 33, 129, 132, 133 and 135.....50&10&10%
Clothes Line, Reading List.....40%
Clothes Line, Sargent's List.50&20&10%
Coat and Hat, Sargent's List...50&10%
Clothes Line, Stowell's.....70%
Coat and Hat, Reading.....45&20%
Coat and Hat, Stowell's.....70%
Coat and Hat, Wrightsville.....65%
Harness, Reading List.....40%
Harness, Stowell's.....60%
School House, Stowell's.....70%

Wire—
Belt.....80&10@..%
Wire C. & H. Hooks:.....
75&10@75&10&10%
Columbian Hdw Co., Gem.....70&10%
Parker Wire Goods Co., King..70&10%
Van Wagoner, Coat and Hat.....70%
Western W. G. Co. Molding.....75%
Wire Goods Co.:
Acme.....60&10%
Chief.....70%
Crown.....75%
Czar.....65%
V Brace.....75%
Czar Harness.....50&10%

Wrought Iron—
Box, 6 in., per doz., $1.00; 8 in., $1.25; 10 in., $1.50.
Cotton.....doz. $1.05@$1.25
Wrought Staples, Hooks, &c.—
See Wrought Goods

Miscellaneous—
Hooks, Bench, see *Stops, Bench.*
Bush, Light, doz. $4.75; Medium, $5.35; Heavy, $6.25
Grass, best, all sizes, per doz.$1.60
Grass, common grades, all sizes, per doz.....$1.30
Whiffletree .....lb. 5¾@6¢
Hooks and Eyes:
Brass .....60&5@60&10&5%
Malleable Iron.....70@70&10%
Covert Mfg. Co. Gate and Scuttle Hooks.....40%
Covert Saddlery Works' Self Locking Gate and Door Hook.....60%
Ft. Madison Cut-Easy Corn Hooks, ℔ doz. $1.25 net
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—
See *Nails, Horse.*

Horseshoes—
See *Shoes, Horses.*

Hose, Rubber—
Garden Hose, ¾-inch:
Competition .....ft. 5 @ 6 ¢
3-ply Guaranteed..ft. 8 @ 9 ¢
4-ply Guaranteed..ft. 10 @11 ¢
Cotton Garden, ¾-in., coupled:
Low Grade.....ft. 8 @ 9 ¢
Fair Quality.....ft. 10 @11 ¢

Irons— Sad—
From 4 to 10.....lb.3 @3½¢
B. B. Sad Irons.....lb. 3¼@3½¢
Mrs. Potts', cents per set:

Nos.	*50*	*55*	*60*	*65*
Jap'd Tops	*68*	*65*	*78*	*75*
Tin'd Tops	*71*	*68*	*81*	*78*

New England Pressing .lb. 3¾@4¼¢

Pinking—
Pinking Irons.....doz.60¢

Irons, Soldering
See *Coppers.*

Jacks, Wagon—
Covert Mfg. Co.:
Auto Screw.....30&2%
Steel.....45%
Covert's Saddlery Works:
Daisy.....60&10%
Victor.....60%
Lockport.....50%
Lane's Steel.....30&10&2%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s.....25%

Kettles—
Brass, Spun, Plain.....20@25%
Enameled and Cast Iron—See Ware, Hollow.

Knives—
Butcher, Kitchen, &c.—
Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co.....50%
Corn—
Withington Acme, ℔ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.
Drawing—
Standard List.....75@75&10%
C. E. Jennings & Co., Nos. 45, 46..60%
Jennings & Griffin, Nos. 41, 42.....60%
Ohio Tool Co.'s.....70%
Swan's.....75%
Watrous.....16⅔%
L. & J. White.....20&5@25%
Hay and Straw—
Serrated Edge, per doz. $5.75@6.00
Iwan's Sickle Edge.....℔ doz. $9.50
Iwan's Serrated.....℔ doz. $10.00
Mincing—
Buffalo.....℔ gro. $13.00
Miscellaneous—
Farriers' .....doz. $3.00@3.25
Wostenholm's .....℔ doz. $3.00@3.25
Knobs—
Base, 2½-inch, Birch, or Maple, Rubber Tip.....gro. $1.25@$1.50
Carriage, Jap., all sizes.....
gro. 40@45¢
Door, Mineral.....doz. 65@70¢
Door, Por. Jap'd.....doz. 70@75¢
Door, Por. Nickel..doz. $2.05@2.15
Bardsley's Wood Door, Shutters, &c.15%
Picture, Sargent's.....60&10&10%

Lacing, Leather—
See *Belting, Leather—*
Ladders, Store, &c.—
Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%
Ladles, Melting—
L. & G. Mfg. Co. (low list).....25%
P. S. & W.....50%
Reading.....60%
Sargent's.....50&10%
Lanterns—Tubular—
Regular Tubular, No. 0.....
doz. $4.25@4.50
Lift Tubular, No. 0.....
doz. $4.75@5.00
Hinge Tubular, No. 0.....
doz. $4.75@5.00
Other Styles.....40@40&5%
Bull's Eye Police—
No. 1, 2¾-inch.....$2.75@3.00
No. 2, 3-inch.....$3.00@3.25
Lasts and Stands, Shoe—
Stowell's Atlas, Malleable Iron.....50%
Stowell's Badger, Cast Iron.....50%
Latches— Thumb—
Roggin's Latches, with screw..
doz. 35@40¢
Door—
Cronk & Carrier Mfg. Co., No. 101, ℔ doz. $2.00
Cronk & Carrier Mfg. Co., Latch, Hasp and Staples.....50%
Richards' Bull Dog, Heavy, No. 125.....50&5%
Richards' Trump, No. 127.....$1.50
Leaders, Cattle—
Small.....doz. 50¢; large, 60¢
Covert Mfg. Co.:
Cotton, Hemp and Jute, 45%; Sisal, 33⅓%.
Lifters, Transom—
R. & E.....33⅓%
Lines—

Wire Clothes, Nos.	*18*	*19*	*20*
100 feet	*$2.25*	*2.00*	*1.75*
75 feet	*$1.75*	*1.35*	*1.10*

Anniston Waterproof Clothes, 50 ft., ℔ gro. $25.00; Gilt Edge $23.00; Air Line, $23.00; Acme, $18.00; Alabama, $17.00; Empire, $16.00; Advance, $14.00; Eclipse, $13.50; Chicago, $11.50; Standard, $10.50; Columbia, $9.50; Alliston, $13.50; Calhoun, $12.00.
Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....℔ gr. 20%
Masons' Lines, Shade Cord, &c.:
White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%

Locks— Cabinet—
Cabinet Locks...33⅓@33⅓&7½%
Door Locks, Latches, &c.—
NOTE.—Net Prices are very often made on these goods.
Reading Hardware Co.....40%
R. & E. Mfg. Co.....40%
Sargent & Co.....40&10%
Stowell's Steel Door Latches.....50%
Elevator—
Stowell's.....50%
Padlocks—
Wrought Iron....75&10&5@80&5%
Net prices are general.
R. & E. Mfg. Co. Wrought Steel and Brass.....75&10%
Sash, &c.—
Ives' Patent:
Bronze and Brass.....62½%
Crescent.....50&10%
Iron.....62½%
Window Ventilating.....60%
Robison Patent Ventilating Sash Lock.....40%
Wrought Bronze and Brass.....55%
Wrought Steel.....55%
Pullman Patent Ventilating Lock..25%
Reading.....40%

Machines—Boring—
Com. Upr't, without Augers.$2.00
Com. Ang'l'r, without Augers.$2.25
Swan's Improved.....40&10%
Angular
Jennings', Nos. 1 and 4.....35&5%
Millers' Falls.....5.75
Snell's, Rice's Pat. 2.50 2.75
Corking—
Reisinger Invincible Hand Power.....
℔ doz. $48.00
Fence—
Williams' Fence Machines....each, $5.50
Hoisting—
Moore's Anti-Friction Differential Pulley Block.....30%
Moore's Hand Hoist, with Lock Brake.....20%
Ice Cutting—
Chandler's.....12½%
Washing—

Boss Washing Machine Co.:	Per doz.
Boss No. 1	$57.00
Boss Rotary	$54.00
Champion Rotary Banner No. 1	$54.00
Standard Champion No. 1	$48.00
Standard Perfection	$26.00
Cinti Square Western	$30.00
Uneeda American, Round	$30.00

Mallets—
Hickory .....45&5@50%
Lignumvitæ .....45&5@50%
Tinners' Hickory and Apple-wood .....doz. 45&5@50%
Mangers, Stable—
Swett Iron Works.....50%
Mashers, Vegetable—
Western, W. G. Co., Potato....60&10%
Mats, Door—
Elastic Steel (W. G. Co.), new list.. 50&10%
Keystone Wire Matting Co.:
Keystone.....50%
Ideal.....50%
Mattocks—
See *Picks and Mattocks.*
Milk Cans—See *Cans, Milk.*
Mills, Coffee, &c.—
Enterprise Mfg. Co.....25@30%
National list Jan. 1, 1902.....30%
Parker's Columbia & Victoria.50&10@60%
Parker's Box and Slide.....50&10@60%
Swift, Lane Bros. Co.....30%
Mowers, Lawn—
NOTE.—Net prices are generally quoted
Cheapest.....all sizes, $1.85@2.00
Cheap .....all sizes, $2.00@2.50
Better Grade..all sizes, $2.50@4.50

	12	*14*	*16*	*18-in.*
High Grade	*$4.50*	*4.75*	*5.00*	*5.25*

Continental.....60&5%
Great American.....70%
Great American Ball B'r'g, new list.70%
Quaker City.....70%
Pennsylvania.....60&5%
Pennsylvania, Jr. Ball Bearing....60%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Granite State:
Style A, Low Wheel....70&10&10&5%
Style B, Low Wheel.....70&10&5%
Style C, High Wheel.....70&10%
Style D, High Wheel.....70%
Philadelphia:
Styles M. S., C., K., T.....70&5%
Style A, all Steel.....60&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list.50%

Nails—
Wire Nails and Brads, Papered, List July 20, 1899..85&5@85&10%
Cut and Wire. See *Trade Report.*
Hungarian, Finishing, Upholsterers' &c. See *Tacks.*
Horse—

Nos.	*6*	*7*	*8*	*9*	*10*	
Anchor	25	24	23	22	21	...40&5%
Champlain	28	26	25	24	23	...50%
Coleman	13	12	12	11	11	...net
New Haven	23	21	20	19	18	...40&5
Putnam	23	21	20	19	18	...33⅓%
New Putnam	19	18	17	16	16	..10&10%
Western						℔ 8½¢

Jobbers' Special Brands.....
per lb .9@10¢
Picture—

	1½	*2*	*2½*	*3*	*3½ in.*
Brass H'd.	*.15*	*.55*	*.60*	*.70*	*.. gro*
Por. Head..	*1.10*	*1.10*	*1.10*		*.. gro*

Nippers—
See *Pliers and Nippers.*
Nuts—
Cold Punched: Off list.
Mfrs. or U. S. Standard.
Square, Blank or Tapped..$4.95
Hexagon, Blank or Tapped.$5.30
Square, Blank, C. & T.....$5.25
Hexagon, Blank, C. & T...$5.90
Hot Pressed:
Mfrs., U. S. or Nar. Gauge Stan'd.
Square, Blank.....$5.30
Hexagon, Blank.....$5.20
Square, Tapped.....$5.20
Hexagon, Tapped.....$5.70

Oakum—
Best .....lb.6¼@6½¢
U. S. Navy.....lb. 5¾@6¢
Navy .....lb. 4½@5¢
Plumbers' Spun Oakum..2½@3¢
In carload lots ½¢ lb. off, f.o.b. New York.
Oil Tanks—See *Tanks, Oil.*
Oilers—
Brass and Copper.....50&10%
Tin or Steel.....70&10&5%
Zinc .....70&10&5%
Chase or Paragon:
Brass and Copper.....50&10%
Tin or Steel.....65&10%
Zinc .....65&10%
Malleable, Hammers' Imp'ed, Nos. 11, 12 and 13.....20%
Malleable, Hammers' Old Pattern, Nos. 1, 2 and 3.....50%
American Tube & Stamping Co.:
Spring Bottom Cans.....70&10&10%
Railroad Oilers, &c.....60&10&10%
Openers— Can— *Per doz.*
Sprague, Iron Handle....30@35¢
Sprague, Wood Handle...35@40¢
Sardine Scissors.....$1.75@$3.00
National.....50&10%
Stowell's Sprague.....℔ doz. 35@45¢
Vim Tin Shear and Can Opener, ℔ doz., 75c.; per gro., $7.50
Egg—
Nickel Plate.....℔ doz., $2.00
Silver Plate.....℔ doz., $4.00

Packing—
Asbestos Packing, Wick and Rope .....lb. 15@20¢
Rubber—
(*Fair quality goods.*)
Sheet, C. I.....11@12¢
Sheet, C. O. S.....11@12¢
Sheet, C. B. S.....12@13¢
Sheet, Pure Gum.....40@45¢
Sheet, Red.....40@50¢
Jenkins' '96, ℔ lb 80¢.....25@25&5%
Miscellaneous—
American Packing...lb. 7@10 ¢
Cotton Packing.....lb. 15@25 ¢
Italian Packing.....lb. 9@12½¢
Jute .....lb. 4@ 4½¢
Russia Packing.....lb. 8@11 ¢
Pails, Creamery—
R. M. Co., with gauges—No. 1, $6.25; No. 2, $6.50 ℔ doz.
Pails, Water, Well, &c.—
See *Buckets.*
Pans— Dripping—
Standard List.....65&10%
Fry—
Common Lipped:

Nos.	*1*	*2*	*3*	*4*	*5*
Per doz.	*$0.75*	*0.80*	*0.90*	*1.10*	*1.30*

Refrigerator, Galva.—

Inch	*12*	*14*	*16*	*18*
Per doz	*$1.95*	*2.25*	*2.80*	*3.15*

Roasting and Baking—
Regal, R, M, Co., ℔ doz., Nos. 5, $4.50; 10, $5.25; 20, $5.75; 30, $6.25.
Savory, ℔ doz., net, Nos. 200, $9.00; 400, $15.00.
Simplex, ℔ gro.:

No.	40	50	60	140	150	160
	$30.00	35.00	42.00	34.00	39.00	46.00

Paper—Building Paper

Asbestos:	*lb.*	
Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.	*6¢*	Extra 10@10&5%
Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lbs., per 100 sq. ft.	*8¢*	
Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in.	*10¢*	

Per roll
Rosin Sized Sheathing; 500 sq. ft.
Light weight, 25 lbs. to roll .....35@40¢
Medium weight, 30 lbs. to roll, ...40@45¢
Heavy weight, 40 lbs. to roll..
.....50@60¢
Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.
Deafening Felt, 9, 6 and 4½ sq. ft. to lb. ton.....$50.00
Red Rope Roofing, 250 sq. ft. per roll.....$1.75
Tarred Paper—
1 ply (roll 500 sq. ft.), ton....
$32.50@35.50
2 ply, roll 108 sq. ft.....55¢
3 ply, roll 108 sq. ft.....75¢
Slater's Felt (roll 500 sq. ft.).75¢
R. R. M. Stone Surfaced Roofing (roll 110 sq. ft.).....$2.75
Sand and Emery—
Flint Paper and Cloth.60@60&10%
Garnet Paper and Cloth....35%
Emery Paper and Cl'h.60@60&10%
Parers— Apple—
Advance.....℔ doz. $4.00
Baldwin.....℔ doz. $4.00
Bonanza Improved.....each $6.50
Daisy.....℔ doz. $4.00
Dandy.....each $7.50

Eureka Improved.....each $20.00
Family Bay State.....℔ doz. $15.00
Improved Bay State.....℔ doz. $36.00
Little Star.....℔ doz. $5.00
New Lightning.....℔ doz. $7.00
Reading 72.....℔ doz. $3.25
Reading 78.....℔ doz. $6.25
Rocking Table.....℔ doz. $6.20
Turn Table '36.....℔ doz. $6.00
White Mountain.....℔ doz. $5.00

Potato—

Saratoga.....℔ doz. $7.00
White Mountain.....℔ doz. $6.00

Picks and Mattocks—

List Feb. 23, 1899.....75%
Cronk's Handled Garden Mattock, ℔ doz., $6.40.....33⅓%

Pinking Irons—

See *Irons, Pinking.*

Pins, Escutcheon—

Brass.....60@60&10%
Iron, list Nov. 11, '85..60@60&10%

Pipe, Cast Iron Soil—

Carload lots.

Standard, 2-6 in.....60%
Extra Heavy, 2-6 in.....70%
Fittings.....75%

Pipe, Merchant—

Consumers, Carloads.

	Steel.		*Iron.*	
	Blk.	*Galv.*	*Blk.*	*Galv.*
⅛ & ¼ in.	71%	55%	68%	52 %
⅜ in.	73%	59%	70%	56 %
½ in.	75%	63%	72%	60 %
¾ to 6 in.	79%	69%	76½%	66½%
7 to 12 in.	74%	59%	71½%	56 %

Pipe, Vitrified Sewer—

Carload lots.

Standard Pipe and Fittings, 2 to 24 in.:
New England.....68%
New York and New Jersey.71%
*Maryland, Delaware, E. Pa.*75%
West. Pa. and West Va....77%
Virginia.....76%
Ohio, Michigan and Ky....77%
Indiana.....77%
NOTE.—Carload lots are generally delivered.

Pipe, Stove—

Edwards' Nested Stove Pipe:	C. L.	L. C. L.
5 in., per 100 joints	$7.00	$8.00
6 in., per 100 joints	7.50	8.50
7 in., per 100 joints	8.50	9.50

Planes and Plane Irons—

Wood Planes—

Bench, first qual.....40&10%
Bench, Second qual.....50&10%
Molding.....33⅓&10%
Bailey's (Stanley R. & L. Co.).....40%
Chapin-Stephens Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality....50@50&10%
Molding.....33⅓@33⅓&10%
Toy and German.....40@40&10%
Chaplin's.....60%
Ohio Tool Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality....50@50&10%
Molding.....33⅓@33⅓&10%
Adjustable Wood Bottom.....60%
Union.....60%

Iron Planes—

Bailey's (Stanley R. & L. Co.).....40%
Chaplin's Iron Planes.....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....35%
Ohio Tool Co.'s Iron Planes.....60%
Sargent's.....60&10%
Union.....60%

Plane Irons—

Wood Bench Plane Irons.....
25&10@30%
Buck Bros.....30%
Chapin-Stephens Co.....30@30&10%
Ohio Tool Co.....30%
Stanley R. & L. Co.....35%
Union.....50%
L. & I. J. White.....20&5@25%

Planters, Corn, Hand—

Kohler's Eclipse.....℔ doz. $8.50

Plates—

Felloe.....lb. 4@4¼¢
Self-Sealing Pie Plates (R. M. Co.). ℔ doz. $2.00.....50%

Pliers and Nippers—

Button Pliers....75&10@75, 10, 5%
Gas Burner, per doz., 5 in., $1.25 @ $1.30; 6 in., $1.45 @ $1.50.
Gas Pipe.. 7 8 10 12-in.
$2.00 $2.25 $3.00 $3.75
Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
American Button.....75&10%
Cronk's.....60%
Stub's Pattern.....60%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&10@40&10&10%
The Nettleton Mfg. Co. Reversible Cutting Nippers.....40%
P., S. & W. Tinners' Cutting Nippers.....40%
Wm. Schollhorn Co.:
Bernard.....33⅓%
Elm City.....33⅓%
Lodi.....50%
Paragon.....50%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds.....40%

Plumbs and Levels—

Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10&10%
Chapin's Imp. Brass Cor.40@40&10&10%
Pocket Levels.....30@30&10&10%
Disston's Plumbs and Levels.....70%
Disston's Pocket Levels.....10%
C. E. Jennings & Co.'s Iron.....35½%
C. E. Jennings & Co.'s Iron, Adjustable.....40&7½%
Stanley R. & L. Co.....45%
Stanley's Duplex.....35%
Woods' Extension.....33⅓%

Poachers, Egg—

Buffalo Steam Egg Poachers, ℔ doz., No. 1, $6.00; No. 2, $9.00; No. 3, $9.00; No. 4, $12.00.....50%

Points, Glaziers'—

Bulk and 1-lb. papers.....lb. 10¢
½-lb. papers.....lb. 9@10½¢
¼-lb. papers.....lb. 9¼@11¢

Pokes, Animal—

Ft. Madison Hawkeye.....℔ doz. $3.25
Ft. Madison Western.....℔ doz. $4.00

Police Goods—

Manufacturers' Lists...25@25&5%
Tower's.....25%

Polish—Metal, Etc—

Glasbrite, No. 2, 5 lb can (powder), each, $1.25; ℔ doz., $12.00; No. 2, 10 lb can (cake), each, $2.50; ℔ doz., $24.00.
Prestoline Liquid, No. 1 (½ pt.), ℔ doz., $3.00; No. 2 (1 qu.), $9.72....40%
Prestoline Paste.....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes, ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25; ℔ gro., $12.00.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75; ℔ gro., $18.00.
Wynn's White Silk, ½ pt. cans, ℔ doz.....$2.00

Stove—

Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans, ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can....each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon's, ℔ gr. $3.75.....10%
Dixon's Plumbago.....℔ lb 8¢
Fireside.....℔ gr. $2.50
Gem, ℔ gr. $1.50.....10%
Japanese.....℔ gr. $3.50
Jet Black.....℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ℔ doz. $1.50
Wynn's:
Black Silk, 5 lb pail.....each 70¢
Black Silk, ½ lb box.....℔ doz. $1.00
Black Silk, 5 oz. box.....℔ doz. $0.75
Black Silk, ½ pt. liq.....℔ doz. $1.00

Poppers, Corn—

1 qt., Square.....gro. $9.00
1 qt., Round.....gro. $10.00
1½ qt., Square.....gro. $11.00
2 qt., Square.....gro. $13.00

Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

Posts, Steel—

Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

Potato Parers—

See *Parers, Potato.*

Pots, Glue—

Enameled.....40%
Tinned.....35%

Powder—

In Canisters:
Duck, 1 lb.....each 45¢
Fine Sporting, 1 lb....each 75¢
Rifle, ½-lb.....each 15¢
Rifle, 1-lb.....each 25¢
In Kegs:
12½-lb. kegs.....$3.50
25-lb. kegs.....$4.50
King's Semi-Smokeless:

Keg (25 lb bulk)	$6.50
Half Keg (12½ lb bulk)	$3.50
Quarter Keg (6¼ lb bulk)	$1.90
Case 24 (1 lb cans bulk)	$8.50
Half case (1 lb cans bulk)	$4.50

King's Smokeless: Shot Gun. Rifle.

Keg (25 lb bulk)	$12.00	$15.00
Half Keg (12½ lb bulk)	6.25	7.75
Quarter Keg (6¼ lb bulk)	3.25	4.00
Case 24 (1 lb cans bulk)	14.00	17.00
Half case 12 (1 lb c. bk)	7.25	9.75

Robin Hood Sm'less Shot Gun..50&20%

Presses—

Fruit and Jelly—

Enterprise Mfg. Co.....20@25%

Seal Presses—

Morrill's No. 1, ℔ doz., $28.00.....50%

Pruning Hooks and Shears

See *Shears.*

Pullers, Cork—

Invincible Cork Puller.....$21.00

Pullers, Nail—

Cyclops.....50%
Miller's Falls, No. 3, ℔ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $30.00.....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
Scranton, Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B, No. 2, case lots..... ℔ doz. $6.00
Diamond B, No. 3, case lots..... ℔ doz. $5.50
Giant No. 1, ℔ doz. $18; No. 2, $16.50; No. 3, $15.....33⅓%
Staple Pullers.....60%
Parrot Tack and Stub Puller, ℔ doz., 75c.: ℔ gro., $6.00

Pulleys, Single Wheel—

Inch	1¼	1¾	2	3
Awning or Tackle, doz.	$0.30	.45	.60	1.05

Hay Fork, Swivel or Solid Eye. doz., 1 in., $1.25; 5 in., $1.55

Inch	2	2¼	2½	
Hot House, doz.	$0.65	.85	1.20	
Inch	1¼	1½	1¾	2
Screw, doz.	$0.16	.19	.25	.30
Inch	1¾	2	2¼	2½
Side, doz.	$0.25	.40	.55	.60
Inch	1½	1¾	2	2½

Stowell's:
Ceiling or Hnd. Anti-Friction..60&10%
Dumb Waiter, Anti-Friction..60&10%
Electric Light.....60%
Side, Anti-Friction.....60&10%

Sash Pulleys—

Common Frame; Square or Round End, per doz, 1¾ and 2 in.....16@19¢
Auger Mortise, no Face Plate, per doz., 1¾ and 2 in..16@19¢
Acme.....1¾ in., 16¢; 2 in., 19¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ℔ doz. 50%
Grand Rapids All Steel Noiseless..50%
Ideal.....70&10%
Niagara.....1¾ in., 16¢; 2 in., 19¢
No. 26, Troy..1¾ in., 14½¢; 2 in., 16½¢
Star.....1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See Blocks.

Pumps—

Cistern.....60@60&10%
Pitcher Spout.....80@80&10%
Wood Pumps, Tubing, &c..45@50%
Barnes Dbl. Acting (low list).....50%
Barnes' Pitcher Spout.....75&10&5%
Contractors' Rubber Diaphragm No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump.....℔ doz. $6.75
Flint & Walling's, Fast Mail Hand, (low list).....55%
Flint & Walling's Fast Mail (low list).....55&5%
Flint & Walling's Tight Top Pitcher.80%
National Specialty Mfg. Co., Measuring, $6.00.....30%
Mechanical Sprayer.....$6.00
Myers' Pumps (low list).....50%
Myers' Power Pumps.....50%
Myers' Spray Pumps.....50&10%

Pump Leathers—

Plunger and Lower Valve—Per gro.:

Inch...	2	2¼	2½	2¾
	$2.20	*2.50*	*2.75*	*3.00*
Inch...	3	3¼	3½	3¾ 4
	$3.30	*3.60*	*3.85*	*4.10 4.40*

Plunger Cup Leathers—Per 100:

Inch...	2½	3	3½	4
	$2.75	*3.85*	*5.00*	*6.00*

Punches—

Saddlers' or Drive, good..... *doz. 50@75¢*
Spring, single tube, good quality.....*$1.75@2.00*
Revolving (4 tubes)..... *doz. $3.50@3.75*
Bemis & Call Co.'s Cast St'l Drive.50%
Bemis & Call Co.'s Check.....55%
Morrill's Nos. 1AA, 1A, 1B, 1C, $15.00.....50%
Hercules, die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Wm. Schollhorn Co.:
Bernard.....33⅓%
Lodi.....50%
Paragon.....50%
Steel Screw, B. & K. Mfg. Co.....50%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.41.....60%

Rail—Barn Door, &c.—

Sliding Door, Painted Iron.....
2½@3¾¢
Sliding Door, Wrought Brass, 1½ in., lb., 36¢.....30%
Allith Mfg. Co.:
No. 1, Reliable Hgr. Track, ℔ ft. 5½¢
No. 2, Reliable Hgr. Track, ℔ ft. 7¢
Cronk's:
Double Braced Steel Rail..℔ ft. 2¾ c
O. N. T. Rail.....2½¢
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.00; 1¼ x 3-16 in., 3.50.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.10; 1¼ x 3-16 in., $3.60.
Lane's:
Hinged Track, ℔ 100 ft., 1 in., $3.40; 1¼ in., $4.10.
O. N. T. ℔ 100 ft., 1 in., $2.75; 1¼ in., $3.50; 1½ in., $4.00.
Standard, 1¼ in.....℔ 100 ft. $4.00
Lawrence Bros.:
℔ 100 ft. No. 201, $4.00; No. 202, $4.00
New York, 1 x 3-16 in., ℔ 100 ft. $2.75
McKinney's:
Hinged Hanger Rail, ℔ ft., 11¢..50%
None Better.....℔ ft. 3¾¢
Standard.....℔ ft. 4 ¢
Myers' Stayon Track.....60&10%
Richards' Mfg. Co.:
Common 1 x 3-6 in., $2.25; 1¼ x 3-16, $2.50; 1¼ x 3-16, $2.75.
Special Hinged Hanger Rail...60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, ℔ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
Safety Door Hanger Co.'s Storm King Safety.....60%
Safety Door Hanger Co.'s U. S. Standard.....60%
Stowell's:
Cast Rail.....℔ ft. 1¾¢
Steel Rail, Plain.....2¾¢
Wrought Bracket, 1 3-16 in.....℔ ft. 3¢
Wrought Bracket, 1¼ x 5-16..℔ ft. 7¢
Swett's Hylo, ℔ ft. 11¢.....60%
P. L. B. Steel Rail.....℔ 100 ft. $3.00
No. 0, 1 x 3-16.....℔ 100 ft. $2.75

Rakes—

NOTE.—Many goods are sold at net prices.
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn...$2.70
Jackson Lawn, 29 and 30 teeth, ℔ doz., net.....$4.25
Cronk's:
New Champion Garden, ℔ doz., 12 teeth, $15.00; 14, $16.50; 16, $18.00..75%
Victor Garden, ℔ doz. 12 teeth, $15.00; 14, $16.50; 16, $18.00.....80%
Queen City Lawn, ℔ doz., 29 teeth, $3.45; 24, $3.60.....net.
Anticlog Lawn, ℔ doz.....$4.00
Malleable Garden.....70&10%
Kohler's:
Lawn Queen, 20-tooth.....℔ doz. $3.45
Lawn Queen, 24-tooth.....℔ doz. $3.60
Paragon, 20-tooth.....℔ doz. $2.75
Paragon, 24-tooth.....℔ doz. $3.00
Steel Garden, 14-tooth....℔ doz. $2.40
Malleable Garden, 14-tooth, ℔ doz. $1.75@2.00
Weldless Steel Garden.....75&5%

Rasps, Horse—

Disston's.....75%
Heller Bros.'.....70&5@70&10&5%
McCaffrey's American St'd...60&10&5%
New Nicholson.....70&10@75%
See also Files.

Razors—

Boras—I C.....60%
Fox Razors, No. 42..℔ doz. $30.00
Fox Razors, No. 44..℔ doz. $30.00
Fox Razors, No. 82, Platina.... ℔ doz. $25.00
} 40% Dis.
Red Devil.....50%
Silberstein:
Carbo Magnetic.....$18.00
Griffon, No. 65.....$15.00
Griffon, No. 00.....$12.00
All other Razors.....40%

Safety Razors—

Kampfe Bros.:
Star Safety.....25%
Star Interchangeable.....25%
Star Safety Corn.....25%
Silberstein.....40%

Reels, Fishing—

Hendryx:
M 6, Q 6, A 6, B 6, M 9½, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo.....20%
Aluminum, German Silv., Bronze.25%
1240 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN.....20%
2904 P.....33⅓%
2904 PN.....33⅓%
0924 N.....33⅓%
02084 N.....33⅓%
002904 PN.....33⅓%
802 N.....33⅓%
986 PN, 2904 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

Registers—*List July 1, 1903.*

Japanned, Electroplated and Bronzed.....70&10%

Revolvers—

Single Action.....85¢@$1.00
Double Action, except 44 cal..$1.85
Double Action, 44 caliber....$2.00
Automatic.....$3.45
Hammerless.....$4.00

Riddles, Hardware Grade

16 in.....per doz. $2.50@$2.75
17 in.....per doz. $2.75@$3.00
18 in.....per doz. $3.00@$3.25

Rings and Ringers—

Bull Rings—

	2	2½	3 inch.
Steel	$0.70	0.75	0.80 doz.
Copper	$1.00	1.15	1.40 doz.

Rea's Improved Self-Piercing, Copper, 2 in., ℔ doz., $1.25; 2½ in., $1.50; 3 in., $1.75.

Hog Rings and Ringers—

Hill's Rings, gro. boxes.$4.00@4.50
Hill's Ringers, Gray Iron..... *doz. 50@55¢*
Hill's Ringers, Malleable Iron.. *doz. 70@75¢*
Blair's Rings...*per gro.*$4.75@5.25
Blair's Ringers..*per doz. $0.60@ .65*
Brown's Rings..*per gro.$5.00@5.50*
Brown's Ringers.per doz.$0.60@ .65

Rivets and Burrs—

Copper.....40&10@45%
Iron or Steel.....75@75&5%

Bifurcated and Tubular—

Assorted in Boxes.
Bifurcated, per doz. boxes, pasteboard boxes, 23@25¢; Tin boxes, 29@32¢.
Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.

Rollers—

Acme, Stowell's Anti-Friction.....50%
Barn Door, Sargent's list.....60%
Cronk's Stay No. 65, $0.90; No. 50 .....$1.00
Cronk's Brinkerhoff No. 85, $0.60; No. 56.....$0.84
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%
Stowell's Barn Door Stay..℔ doz. $1.00
Swett's Anti-Friction.....50%
Screw and Spike Stay.....℔ doz. 65¢
Hinge Adjustable Stay.....℔ doz. 90¢

Rope—

Manila, 7-16 in. diam. and larger: Pure.....lb., 12½¢
Sisal, 7-16 in. diam. and larger: Pure.....lb., 10¢
Sisal, 7-16 in. diam. and larger: No. 2 quality.....lb., 8¢
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse: Mixed.....lb., 8¢
Pure.....lb. 10¢
Sisal, Tarred, Medium Lath Yarn, Coarse and Untarred: Mixed.....lb., 8¢
Pure.....lb. 10¢
Cotton Rope: Best, ¼-in. and larger..16½@18¢
Medium, ¼-in. and larger, 15½@16½¢
Common, ¼-in. and larger..10¢
In coils, ½¢ advance.
Jute Rope: Thread No. 1, ¼-in. & up. lb. 6½¢
Thread No. 2, ¼-in. & up, lb. 5½¢
Old Colony Manila Transmission Rope.....℔ lb 17½¢

Wire Rope—

Galvanized.....37½&2½%
Plain.....45&2½%

Ropes, Hammock—

Covert Mfg. Co.:
Jute.....45%
Sisal.....33⅓%
Covert Saddlery Works.....60&5%

Rulers, Desk—
Stimpson & Son:
Boxwood and Maple.....30&10%

Rules
Boxwood .....60&10&10%
Ivory .....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood .....60@60&10%
Flexifold .....27½&10&10&2½%
Ivory .....35@35&10&10%
Miscellaneous .....50@50&10&10%
Combination .....55@55&10%
Stationers' .....10@10&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....60%
Stanley R. & L. Co.:
Boxwood 62½%
Ivory 45%
Miscellaneous 60%
Zig Zag.....40%
Zig Zag, Pin Joint.....42½%
Upson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10%

Sash Balances—
See *Balance, Sash.*

Sash Locks—
See *Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—
Atkins':
Circular 50%
Band .....50&10@60%
Cross Cuts.....35&5%
Mulay, Mill and Drag.....50%
One-Man Saw.....40%
Wood Saws.....40%
Hand, Compass, &c.....40%
Chapin-Stephens Co.:
Turning Saws and Frames..30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws.....30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth.50%
Band, 2 to 14 in. wide.....60%
Band, ⅛ to 1⅛.....60%
Crosscuts 50%
Narrow Crosscuts.....55%
Mulay, Mill and Drag.....50%
Framed Woodsaws.....35%
Woodsaw Blades.....35%
Woodsaw Rods.....25%
Hand Saws, Nos. 12, 99, 9, 16, d100, 98, 120, 76, 77, 8.....25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination.....30%
Compass, Key Hole, &c.....25%
Butcher Saws and Blades.....35%
C. E. Jennings & Co.'s:
Back Saws.....25%
Butcher Saws.....30%
Compass and Key Hole Saws..35&5%
Framed Wood Saws.....30%
Hand Saws.....20&2½%
Wood Saw Blades.....35%
Millers Falls:
Butcher Saws.....15&10%
Star Saw Blades.....15&10%
Peace & Richardson's Hand Saws...30%
Simonds':
Circular Saws.....50%
Crescent Ground Cross Cut Saws..35%
One-Man Cross Cuts.....40&10%
Gang Mill, Mulay and Drag Saws.50%
Band Saws.....50%
Back Saws.....25@25&7½%
Butcher Saws.....35@35&7½%
Hand Saws.....25@25&7½%
Hand Saws, Bay State Brand.....40%
Compass, Key Hole, &c..25@25&7½%
Wood Saws.....35@35&7½%
Springfield Mach. Screw Co.:
Diamond Kitchen Saws....40&10@50%
Butcher Saws Blades.....35@40%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws.....50%

Hack Saws—
Atkins' Hack Saw Blades A A A..25%
Disston's:
Concave Blades.....25%
Keystone 40%
Hack Saw Frames.....30%
Fitchburg File Works, The Best...35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180.....40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades.....40%
Griffin's Hack Saw Frames..35&5&10%
Griffin's Hack Saw Blades....35&5&10%
Springfield Mach. Screw Co.:
Diamond Hack Saw Blades.....35%
Diamond Hack Saw Frames.....50%
Star Hack Saws and Blades.....15&10%
Sterling Hack Saw Blades....30&10&5%
Sterling Hack Saw Frames ..30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00..10%
Victor Hack Saw Blades.....25%
Victor Hack Saw Frames.....40%

Scroll—
Barnes' No. 7, $15.....25%
Barnes' Scroll Saw Blades.....40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20.....20%
Foster, complete, $10.00.....15&10%
Rogers, complete, $4.00.....15&10%

Scalers, Fish—
Covert's Saddlery Works.....60&10%

Scales—
Family, Turnbull's....50@50&10%
Counter:
Hatch, Platform, ½ oz. to 4 lbs. .....doz. $5.50
Two Platforms, ½ oz. to 8 lbs. .....doz. $16.00
Union Platform, Plain.$1.70@1.90
Union Platform, Stpd.$1.85@2.15
Fullion's:
Eureka 25%
Favorite 40%
Grocers' Trip Scales.....50%
Chicago Scale Co.:
The "Little Detective"....25 lbs 50%
Union or Family No. 2.....60%
Portable Platform (reduced list)..50%
Wagon or Stock (reduced list).25@35%
"The Standard" Portables.....50%
"The Standard" R. R. and Wagon.50%

Scrapers—
Box, 1 Handle.....doz. $2.00@2.25
Box, 2 Handle.....doz. $2.60@2.85
Ship....Light, $2.00; Heavy, $4.50
Adjustable Box Scraper (S. R. & L. Co.), $6.00.....45%
Chapin-Stephens Co., Box, 30@30&10&10%

Screens, Window and Frames—
Maine Screen Frames.....40&10&5%
See also *Doors.*

Screws—Bench and Hand
Bench, Iron, doz., 1 in., $2.50@2.75; 1⅛, $3.00@3.25; 1¼, $3.50@3.75
Bench, W'd, Beech.doz. 50@30&5%
Hand, Wood.....30@30&5%
R. Bliss Mfg. Co., Hand....30@30&10%
Chapin-Stephens Co., Hand..30@30&10%
Ohio Tool Co., Bench and Hand..30%

Coach, Lag and Hand Rail—
Lag, Cone Point, list Oct. 1, '99 .....75&15%
Coach, Gimlet Point, list Oct. 1, '99.....75&10%
Hand Rail, list Jan. 1, '81.....70&10@75%

Jack Screws—
Standard List.....80@80&5%
Millers Falls.....50&10&10%
Millers Falls, Roller.....50&10%
P., S. & W.....50%
Sargent .....70&10%
Swett Iron Works.....75&10@80&5%

Machine—
List Jan. 1, '98:
Flat or Round Head, Iron.... 50@50&10%
Flat or Round Head, Brass.... 50@50&10%

Set and Cap—
Set (Iron).....80%
Set (Steel), net advance over Iron 25%
Sq. Hd. Cap.....75%
Hex. Hd. Cap.....75%
Rd. Hd. Cap.....60&10%
Fillister Hd. Cap.....60&10&10%

Wood—
List July 23, 1903.
Flat Head, Iron.....87½&10@..%
Round Head, Iron...85 &10@..%
Flat Head, Brass....85 &10@..%
Round Head, Brass..80 &10@..%
Flat Head, Bronze...77½&10@..%
Round Head, Bronze.75 &10@..%
Drive Screws.....87½&10%

Scroll Saws—
See *Saws, Scroll.*

Scythes—
	Per doz.
Grass, No. 1, Plain Finish	$6.25
Clipper, Bronzed Webb	$6.50
No. 3 Clipper, Pol'd Webb	$6.75
No. 6 Clipper & Solid Steel	$7.00
Bush, Weed & Bramble, No. 2	$6.50
Grain, No. 1	$8.25
Bronzed Webb, No. 1	$8.50
Nos. 3 & 4 Clipper, Grain	$8.75
Solid Steel No. 6	$9.25

Seeders, Raisin—
Enterprise .....25@30%

Sets—Awl and Tool—
Aiken's Sets, Awl and Tools:
No. 20, ℔ doz., $10.00.....60&10%
Fray's Adj. Tool Handles, Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7.....50%
C. E. Jennings & Co.'s Model Tool Holders 30%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18....15&10%

Garden Tool Sets—
Ft. Madison Three Plows, Hoe, Rake and Shovel.....℔ doz sets $9.00

Sets, Nail—
Octagon .....gro. $3.50@3.75
Buck Bros.....27½%
Cannon's Diamond Point, ℔ gro.$12.40%
Mayhew's .....℔ gro. $9.00
Snell's Cor'gated, Cup Pt...℔ gro. $7.20
Snell's Knurled, Cup Pt...℔ gro. $7.20
Springfield Mach. Screw Co.:
Diamond Knurled Cup Pt.℔ gro. $7.50

Rivet—
Regular list.....75@75&10%

Saw—
Aiken's:
Genuine .....50&10%
Imitation .....50&10%
Atkin's:
Criterion 40%
Adjustable 40%
Bemis & Call Co.'s:
Cross Cut.....30%
Plate 30%
Disston's Star and Monarch.....25%
Morrill's No. 1, $15.00.....50%
Nos. 3 and 4, Cross Cut, $20.00...50%
No. 5, Mill, $30.00.....50%
Nos. 10, 11, 95, $15.60.....50%
No. 1 Old Style, $10.00.....50%
Special, $16.25.....50%
Giant Royal Cross Cut.....℔ doz. $8.00
Royal, Hand.....℔ doz. $4.50
Taintor Positive.....℔ doz. $6.75

Shaving—
Fox Shaving Sets, No. 30 .....℔ doz., net, $24.00
Smith & Hemenway Co.'s.....60%

Sharpeners, Knife—
Chicago Wheel & Mfg. Co.....70%
Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ℔ doz.....$1.50
Mounted Kitchen Sand Stone, ℔ doz.....$1.50
Natural Grit Carving Knife Hones, ℔ doz.....$3.00
Quick Cut Emery Carving Knife Hones, ℔ doz.....$1.50
Quick Edge Pocket Knife Hones, ℔ doz.....$2.50

Skate—
Smith & Hemenway Co.....30%

Shaves, Spoke—
Iron .....doz.$1.10@1.25
Wood .....doz.$1.75@2.25
Bailey's (Stanley R. & L. Co.).....45%
Razor Edge (Stanley R. & L. Co.)...35%
Chapin-Stephens Co.....30@30&10&10%
Goodell's, ℔ doz. $9.00.....15&10%
Wood's F1 and F2.....50%

Shears—
Cast Iron.. 7	8	9 in.
Best $16.00	18.00	20.00 gro.
Good $13.00	15.00	17.00 gro.
Cheap $5.00	6.00	7.00 gro.

Straight Trimmers, &c.:
Best quality Jap....70@70&10%
Best quality, Nickel..60@60&10%
Fair quality, Jap....80@80&5%
Fair quality, Nickel..75@75&10%
Tailors' Shears.....40@40&10%
Acme Cast Shears.....40@40&5%
Heinisch's Tailor's Shears.....10%
Wilkinson's Sheep, 1900 list.....50&10%

Tinners' Snips—
Steel Blades.....20&5@20&10%
Steel Laid Blades....40&10@50%
Forged Handles, Steel Blades, Berlin, 50@50&5%
Heinisch's Snips.....40%
Jennings & Griffin Mfg. Co.'s, 6½ to 10 in.....50%
Niagara Snips.....40%
P., S. & W. Forged Handles.....20%

Pruning Shears—
Cronk's Hand Shears.....33⅓%
Cronk's Wood Handle Shears.....33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00.....25%
Disston's Pruning Hook, ℔ doz. $12.00 .....25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades....50&10%
P., S. & W. Co.....33⅓%
Wilkinson's Hedge, 1900 list.....50&10%
Wilkinson's Lawn and Border.....50%

Sheaves—Sliding Door—
Stowell's Anti-Friction.....50%
Patent Roller, Hatfield's, Sargent's list .....10&10%
Reading 40%
R. & E. list.....33⅓%
Wrightsville Hatfield Pattern.....80%

Sliding Shutter—
Reading list.....40%
R. & E. list.....33⅓%
Sargent's list.....10&10%

Shells—Shells, Empty—
Brass Shells, Empty:
Climax, Club, Rival, 10 and 12 gauge .....65&5%
Paper Shells, Empty:
Acme, Ideal, Leader, New Rapid, Magic, 10, 12, 16 and 20 gauge..25&5%
Blue Rival, New Climax, Challenge, Monarch, Defiance, Repeater, Yellow Rival, 10, 12, 16 and 20 gauge 20%
Climax, Union, League, New Rival, 10 and 12 gauge.....25%
Climax, Union, League, New Rival, 14, 16 and 20 gauge.....20%
Expert, Metal Lined and Pigeon, 10 12, 16 and 20 gauge.....33⅓
Robin Hood, Low Brass.....20&5%
Robin Hood, High Brass.....30&5%

Shells, Loaded—
Loaded with Black Powder..40%
Loaded with Smokeless Powder, medium grade.....40&5%
Loaded with Smokeless Powder, high grade.....40&10&10%
Robin Hood Smokeless Powder:
Robin Hood, Low Brass.....50%
Comets, High Brass.....50&10&5%

Shoes, Horse, Mule, &c.—
F.o.b. Pittsburgh:
Iron .....per keg $4.00
Steel .....per keg $3.75
Burden's, all sizes.....℔ keg $3.90

Shot—
Drop, up to B, 25-lb. bag....$1.80
Drop, B and larger ..... per 25-lb. bag, $2.05
Buck, 25-lb. bag.....$2.05
Chilled, 25-lb. bag.....$2.05

Shovels and Spades—
Association List, Nov. 15, 1902..40%

Snow Shovels—
Long Handle.....$2.75@$3.00
Wood and Mail, D. Handle. ..... $3.25@$3.50

Sieves and Sifters—
Hunter's Imitation ..... gro.$9.50@10.00
Hunter's Genuine ..... per gro. $12.00@12.50
Buffalo Metallic Blued, R. M. Co., ℔ gr.
14&16	16&18	18&20
$13.20	$13.50	$14.40

Shaker (Barler's Pat.) Flour Sifters, ℔ doz., $2.00.....20%

Sieves, Seamless Metallic
—Per dozen.—
Mesh	14	16	18	20
Iron Wire	$1.05	1.05	1.10	1.20
Tinned Wire	$1.15	1.15	1.20	1.30

Sieves, Wooden Rim—
Nested, 10, 11 and 12 Inch.
Mesh 18, Nested....doz. $0.90@0.95
Mesh 20, Nested....doz. $1.00@1.05
Mesh 24, Nested....doz. $1.30@1.40

Sinks, Cast Iron—
Painted, Standard List:
12 x 12 to 22 x 26 in....60&5%
20 x 40 to 24 x 50 in.....55%
24 x 60 to 24 x 120 in.....35%
Barnes' low list:
Up to and including 20 x 38 in....60%
20 x 40 to 24 x 50 in.....55%
NOTE.—There is not entire uniformity in lists used by jobbers.

Skeins, Wagon—
Cast Iron.....80@80&10%
Steel .....40@40&10%

Slates, School—
Factory Shipments.
"D" Slates.....50@50&10%
Eureka, Unexcelled Noiseless.. 60&5 tens
Victor A, Noiseless.60&4 tens &5%

Slaw Cutters—See *Cutters.*

Snaps, Harness—
German .....40@40&10%
Covert Mfg. Co.:
Derby .....30&2%
High Grade.....45%
Jockey 35%
Trojan 45%
Yankee .....30&2%
Yankee Roller.....30&2%
Covert's Saddlery Works:
Crown 60%
German 60%
Model 60%
Triumph 60%
Oneida Community:
Harness Snaps, 1 inch.....60&5%
Swivel Snaps.....60%
Swivels 50%
Sargent's Patent Guarded....66⅔&10%

Snaths—
Scythe 50%

Snips, Tinners—See *Shears.*

Spoons and Forks—
Silver Plated—
Good Quality.....50&10@60&5%
Cheap .....60@60&10%
International Silver Co.:
1847 Rogers Bros. and Rogers & Hamilton .....40&10%
Rogers & Bro., William Rogers' Eagle Brand.....50&10%
Anchor, Rogers Brand.....60%
Wm. Rogers & Son.....60&10%

Miscellaneous—
German Silver.....60@60&5%
Cattaraugus Cutlery Co.:
Seneca Silver.....50%

Tinned Iron—
Teas .....per gro. 45@50¢
Tables.....per gro. $0.50@$1.00

Springs—Door—
Chicago (Coil).....40&10%
Gem (Coil).....20%
Pullman (Coil).....25%
Reliance (Coil).....40&10%
Star (Coil).....30%
Torrey's Rod, 39 in.....℔ doz. $1.10
Victor (Coil).....50&10&10%

Carriage, Wagon, &c.—
1¼ in. and Wider: Per lb
Black .....4@4¼¢
Half Bright.....4@4¼¢
Bright .....4½@4¾¢
Painted Seat Springs:
1½ x 2 x 26.....per pr. 42¢
1½ x 3 x 28.....per pr. 70¢

Sprinklers, Lawn—
Enterprise .....25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $24.....30%
Pleuger & Henger Mfg. Co.:
Cactus 70%
Japanese 75%
Nationals 65%

Squares—
Nickel plated..} List Jan. 5, 1900.
Steel and Iron..} 75&10@75&10&5%
Rosewood Hdl. Try Square and T-Bevels .....60&10&10@70%
Iron Hdl. Try Squares and T-Bevels .....40&10@40&10&10%
Disston's Try Sq. and T-Bevels....70%
Winterbottom's Try and Miter, No. 1, 40%; No. 2.....50%

Squeezers, Lemon
Wood, Common, gro., No. 0, $5.25@$5.50; No. 1, $6.25@$6.50.
Wood, Porcelain Lined:
Cheap .....doz. $1.00
Good Grade.....doz. $1.25
Tinned Iron.....doz. $0.75@1.25
Iron, Porcelain Lined...doz. $1.75

Staples—
Barbed Blind.....lb. 6@6½¢
Electricians', Association list.. 80&10&10&10%
Fence Staples, Plain, $2.25; Galvanized $2.55
Poultry Netting Staples..... per lb. 3¼@3½¢
Grand Crossing Tack Co.'s list..80&10%

Steels, Butchers'—
Dick's 30%
Foster Bros.'.....30%
C. & A. Hoffmann's.....40%

Steelyards—....30@30&10%

Stocks and Dies—
Blacksmiths' .....50@50&10%
Curtis Rev'ble Ratchet Die Stock..25%
Derby Screw Plates.....25%
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plates.....25%

Stoners, Cherry—
Enterprise .....25@30%

Stones—Oil, &c.
Chicago Wheel & Mfg. Co., 1904 list:
Gem Corundum Oil, Double Grit.60%
Gem Corundum, Axe, Single or Double Grit.....60%
Gem Corundum Slips.....60%
Gem Corundum Razor Hones....50%
Pike Mfg. Co., 1904 list: ℔ lb.
Arkansas St. No. 1, 3 to 5½ in.$2.80
Arkansas St. No. 1, 5½ to 8 in.$3.50
Arkansas Slips No. 1.....$4.00
Lily White Washita, 4 to 8 in.60¢
Rosy Red Washita, 4 to 8 in..60¢
Washita St., Extra, 4 to 8 in.50¢
Washita St., No. 1, 4 to 8 in.40¢
Washita St., No. 2, 4 to 8 in..30¢
Lily White Slips.....90¢
Rosy Red Slips.....80¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
Washita Slips, No. 2.....40¢
India Oil Stones (entire list)....33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit.....33⅓%
Quickcut Emery and Corundum Axe Stone, Double Grit.....33⅓%
Quickcut Emery Rubbing Bricks.33⅓%

Hindostan No. 1, R'g'lar, ₱ lb 8¢
Hindostan No. 1, Small, ₱ lb 10¢
Axe Stones (all kinds)
Turkey Oil Stones, Extra, 5 to 8 in. ₱ lb 80¢ } 33⅓%
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips 40¢
Sand Stone 6¢

Scythe Stones—

Chicago Wheel & Mfg. Co.:
Gem Corundum, 10 in., $8.00 ₱ gro., 12 in., $10.80.
Norton Emery Scythe Stones:
Less than gross lots ₱ gro. $9.00
One gross or more ₱ gro. $7.20
Lots of 10 gross or more ₱ gro. $6.00
Pike Mfg. Co., 1901 list:
Black Diamond S. S. ₱ gro. $12.00
Lamoille S. S. ₱ gro. $11.00
White Mountain S. S. ₱ gro. $9.00
Green Mountain S. S. ₱ gro. $6.00
Extra Indian Pond S.S. ₱ gro. $7.50
No. 1 Indian Pond S.S. ₱ gro. $7.00
No. 2 Indian Pond S.S. ₱ gro. $4.50
Leader Red End S. S. ₱ gro. $4.50
Quick Cut Emery ₱ gro. $10.00
Pure Corundum, ₱ gro. $18.00
Crescent $7.00
Emery Scythe Rifles, 2 Coat, $8
Emery Scythe Rifles, 3 Coat, $10
Emery Scythe Rifles, 4 Coat, $12
Balance of 1904 list 33⅓% } 33⅓%

Stoppers, Bottle—

Victor Bottle Stoppers ₱ gro. $9.00

Stops— Bench—

Millers Falls 15&10%
Morrill's, ₱ doz., No. 1, $10.00 50%
Morrill's, No. 2, $12.50 50%

Door—

Chapin-Stephens Co. 60@60&10%

Plane—

Chapin-Stephens Co. 20%

Straps— Box—

Cary's Universal, case lots 25&20%

Hame—

Covert's Saddlery Works 60&10%

Stretchers, Carpet—

Cast Iron, Steel Points, doz. 60@60&10%
Socket doz. $1.00
Excelsior Stretcher and Tack Hammer Combined, ₱ doz. $6.00 20%

Strops, Razor—

Star Diagonal Strop 25%

Stuffers, Sausage—

Enterprise Mfg. Co. 25@25&7½%
National Specialty Co., list Jan. 1, 1902 30&5%

Sweepers, Carpet—

National Sweeper Co.: ₱ doz.
Louis XV, Roller Bearing, Gold Plated $120.00
Hepplewhite, Roller Bearing, Silver Plated $72.00
Sheraton, Roller Bearing, N'kel. $60.00
Ye Mission, Roller Bearing, Oxidized Coppered $36.00
Transparent, Roller Bearing, Plate Glass top, Nickeled $36.00
National Queen, Roller Bearing, Fancy Veneers $27.00
Loyal, Roller Bearing, Veneers, Nickeled $25.00
Triple Medal, Roller Bearing, Nickeled $24.00
Marion, Roller Bearing, N'kel. $24.00
Marion Queen, Roller Bearing, Nickeled $21.00
Monarch, Roller Bearing, N'kel. $22.00
Monarch, Roller Bearing, Jap. $20.00
Perpetual, Regular B'r'gs, N'kel. $20.00
Perpetual, Regular B'r'gs, Jap. $18.00
Monarch Extra (17 in. case), Roller Bearing, Nickeled $36.00
Monarch Extra (17 in. case), Roller Bearing, Japanned $33.00
Auditorium (26 in. case), Roller Bearing, Nickeled $54.00
Mammoth (30 in. case), Roller Bearing, Nickeled $60.00

NOTE.—Rebates: 50c per dozen on three-dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots; $3.50 per dozen on twenty-five-dozen lots.

Streator Metal Stamping Co.:
Model E, Sanitaire ₱ doz $25.00
Model A, Sterling ₱ doz. $25.00
Model B, Sterling, Nickeled ₱ doz. $25.00
Model B, Sterling, Japanned ₱ doz. $21.00
Model C, Sterling ₱ doz. $21.50
Model D, Sterling ₱ doz. $19.50

Tacks, Finishing Nails, &c.

New List, May 1, 1905.

American Carpet Tacks 90&10&10%
American Cut Tacks 90&10&10%
Swedes Cut Tacks 90&10&10%
Swedes Upholsterers' Tacks 90&50&10%
Gimp Tacks 90&50&10%
Lace Tacks 90&50%
Trimmers' Tacks 90&10&10%
Looking Glass Tacks 65%
Bill Posters' and Railroad Tacks, 90&50&10%
Hungarian Nails 85%
Finishing Nails 70&10%
Trunk and Clout Nails 80&10%

NOTE.—The above prices are for Standard Weights. An extra 5% is given on Medium Weights, and an extra 10&5% is given on light weights.

Miscellaneous—

Double Pointed Tacks 90&5 *or 6 tens*
Steel Wire Brads, R. & E. Mfg. Co.'s list 50&10@60%
See also Nails, Wire.

Tanks, Oil—

	Each.
Emerald, R. M. Co. 30-gal.	$3.40
Emerald, R. M. Co. 60-gal.	$4.25
Queen City, R. M. Co. 30-gal.	$3.65
Queen City, R. M. Co. 60-gal.	$4.50

Tapes, Measuring—

American Asses' Skin 50@—%
Patent Leather 35@30&5%
Steel 33 1-3&5%
Chesterman's 35@25&5%
Eddy Asses' Skin 40&10@50%
Eddy Patent Leather 25@30&5%
Eddy Steel 40@40&10%
Keuffel & Esser Co.:
Favorite, Ass Skin 40&10@50%
Favorite, Duck and Leather 25&5@25&10%
Metallic and Steel, lower list 35@35&5%
Pocket 35@35&5%
Lufkin's:
Asses' Skin 40&10@50%
Metallic 30@30&5%
Patent Bend, Leather 25&5@25&10%
Pocket 40@40&5%
Steel 33⅓@35%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ⅝-inch and larger . . . per 100 lbs. $2.75@$3.00

Thermometers—

Tin Case 80¢10@80&10&5%

Ties, Bale—Steel Wire—

Single Loop 80&2½%
Monitor, Cross Head, &c. 70%

Brick Ties—

Niagara Brick Ties 25&10%

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tips, Safety Pole—

Covert's Saddlery Works 60&10%

Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

Tools—Coopers'—

L. & I. J. White 20@20&5%

Hay—

Myers' Hay Tools 50%
Stowell's Hay Carriers 50%
Stowell's Hay Forks 50%
Stowell's Fork Pulleys 50%

Miniature—

Smith & Hemenway Co.'s 25%

Saw—

Atkins' Cross Cut Saw Tools 40%
Simonds' Improved 33⅓%
Simonds' Crescent 25%

Ship—

L. & I. J. White 25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Fly—

Balloon, Globe or Acme, doz. $1.15@$1.25; gro. $11.50@12.00
Harper, Champion or Paragon, doz. $1.25@1.40; gro. $13.00@13.50

Game—

Imitation Oneida 75@75&5%
Newhouse 45@45&5%
Hawley & Norton 65%
Victor 70&10%
Oneida Community Jump 50%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes 8½@9¢
Mouse, Round or Square Wire, doz. 85@90¢
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, each $1.21; ₱ doz. $13.25
No. 3, Rat, ₱ doz. $6.50; case of 50 $5.75 doz.
No. 3½, Rat, ₱ doz. $5.25; case of 72 ₱ gro. $4.70 doz.
No. 4, Mouse, ₱ doz. $3.85; case of 150 $3.00 doz.
No. 5, Mouse, ₱ doz. $3.00; case of 150 $2.25 doz.

Trimmers, Spoke—

Wood's E I 50%

Trowels—

Disston Brick and Pointing 30%
Disston Plastering 25%
Disston "Standard Brand" and Garden Trowels 35%
Kohler's Steel Garden Trowels, 5 in. ₱ gro. $4.80
Kohler's Steel Garden Trowels, 6 in. ₱ gro. $6.00
Never-Break Steel Garden Trowels.. ₱ gro. $6.00
Rose Brick and Plastering 25&5%
Woodrough & McParlin, Plastering 25%

Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern 50&10%
Western Pattern 60&10%
Handy Trucks ₱ doz. $16.00
Grocery ₱ doz. $15.00
Daisy Stove Trucks, Improved Pattern ₱ doz. $18.50
McKinney Truck each $10.00
Model Stove Trucks ₱ doz. $18.50

Tubs, Wash—

No. 1 2 3
Galvanized, per doz. $4.25 4.75 5.25
Galvanized Wash Tubs (R. M. Co.):

No.	1	2	3	10	20	30
Per doz., net	$5.70	6.30	7.20	6.60	7.20	8.10

Twine, Miscellaneous—

Flax Twine: BC. B.
No. 9, ¼ and ½-lb. Balls 22@24¢
No. 12, ¼ and ½-lb. Balls 18@20¢
No. 18, ¼ and ½-lb. Balls 16@18¢
No. 24, ¼ and ½-lb. Balls 16@18¢
No. 36, ¼ and ½-lb. Balls 15@17¢
Chalk Line, Cotton ½-lb. Balls 25@30¢
Cotton Mops, 6, 9, 12 and 15 lb. to doz 10@18¢
Cotton Wrapping, 5 Balls to lb., acording to quality 11½@20¢
American 2-Ply Hemp, ¼ and ½-lb. Balls 13@14¢
American 3-Ply Hemp, 1-lb. Balls 13@14¢
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine) 3½¢
India 3-Ply Hemp, 1-lb. Balls 3½¢
India 3-Ply Hemp, 1½-lb. Balls. 7@8¢
2, 3, 4 and 5-Ply Jute, ½-lb. Balls 9@10¢
Mason Line, Linen, ½-lb. Bls. 16¢
No. 24 Mattress, ¼ and ½-lb. Balls 37¢
Wool, 3 to 8 ply . . . B 6¢: A 6½¢

Vises—

Solid Box 60%

Parallel—

Athol Machine Co.:
Simpson's Adjustable 40%
Standard 40%
Amateur 25%
Columbian Hdw. Co. 40%
Emmert Universal:
Pattern Makers' No. 1, $15.00; No. 2, $12.50.
Machinist and Tool Makers' No. 4A, $12.50; No. 5A, $7.00; No. 6A, $10.00; No. 10A, $22.50.
Presto Quick Acting 25@25&5%
Tiger Machinists' 40%
Fisher & Norris Double Screw 15&10%
Hollands':
Machinists' 40@40&5%
Keystone 65&5@70%
Lewis Tool Co.:
Adjustable Jaw 30%
Monarch 50%
Solid Jaw 50%
Massey Vise Co.:
Clincher 40%
Perfect 20%
Lightning Grip 20%
Merrill's 20%
Millers Falls 60&10%
Parker's:
Victor 20@25%
Regulars 20@25%
Vulcan's 40@45%
Combination Pipe 55@60%
Prentiss 20@25%
Sargent's 40%
Snediker's X. L. 33⅓%
Stephens' 33⅓%
Williamson Mfg Co, Double Swivel 40&5%

Saw Filers—

Disston's D 3 Clamp and Guide, ₱ doz. $30 25%
Perfection Saw Clamps, ₱ doz. $4.50
Reading 60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3 45&50%

Wood Workers—

Massey Vise Co.:
Lightning Grip 15%
Perfect 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Miscellaneous—

Bignall & Keeler Combination Pipe Vise 60&10%
Holland's Combination Pipe 60@60&5%
Massey's Quick Action Pipe 40%
Parker's Combination Pipe:
87 Series 60%
127 Series 60&5%
No. 870 40%
Williamson Mfg. Co, Double Swivel Combination Pipe 40&5%

Wads—*Price per M.*

B. E., 11 up 60¢
B. E., 9 and 10 70¢
B. E., 8 80¢
B. E., 7 80¢
P. E., 11 up $1.00
P. E., 9 and 10 1.25
P. E., 8 1.50
P. E., 7 1.50
Dis. 15%
Ely's B. E., 11 and larger $1.70@1.75
Ely's P. E., 12 to 20 $3.00@3.25

Ware, Hollow—

Cast Iron, Hollow—

Stove Hollow Ware:
Enameled 55%
Ground 60%
Plain or Unground 65%
Country Hollow Ware, per 100 lbs. $2.75
White Enameled Ware:
Maslin Kettles 70%
Covered Wares
Tinned and Turned 40%
Enameled 50%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware 60%
Iron Clad Ware 70&10%
Lava, Enameled 40&10%
Never Break Enameled 50%

Tea Kettles—

Galvanized Tea Kettles:

Inch	6	7	8	9
Each	45¢	50¢	55¢	65¢

Steel Hollow Ware—

Avery Spiders and Griddles 65@65&5%
Avery Kettles 60%
Porcelained 50&5&50&10%
Never Break Spiders and Griddles 65&5%
Never Break Kettles 60%
Solid Steel Spiders and Griddles 65&5%
Solid Steel Kettles 60%

Warmers, Foot—

Pike Mfg. Co., Soapstone 40@40&10%

Washboards—

Solid Zinc: ₱ doz.
Crescent, family size, bent frame $3.25
Red Star, family size, stationary protector $3.25
Double Zinc Surface:
Saginaw Globe, family size, stationary protector $2.90
Cable Cross, family size, stationary protector $3.15
Single Zinc Surface:
Naiad, family size, open back, perforated $2.65
Saginaw Globe, protector, family size, ventilated back $2.50
Brass Surface:
Brass King, Single Surface, open back $3.25
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.25
Glass Surface:
Glass King, Single Surface, open back $3.25
Enamel Surface:
Enamel King, Single Surface, ventilated back $3.25

Washers—Leather, Axle—

Solid 50&10@80&10&10%
Patent 90@90&5%
Coil: ¼ 11¢ ⅝ 11¢ ¾ 12¢ 1¼ *Inch.* 13¢ *per box*

Iron or Steel—

Size bolt . . . 5-16 ⅜ ½ ⅝ ¾
Washers . . . $5.70 4.80 3.50 3.30 3.10
The above prices are based on 5.70¢ off list.
In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.

Cast Washers—

Over ½ inch, barrel lots . . . per lb. 1¾@2¢

Weather Strip—

Flexible Felt—

Lined, per 100 ft., $2; $3; $4 40&10%
Moore's Unlined, per 100 ft., $2; $3; $4 50&10%

Wedges—

Oil Finish lb. 2.70@2.80¢

Weights—Hitching—

Covert Mfg. Co. 40%
Covert's Saddlery Works 60&10%

Sash—

Per ton, f.o.b. factory:
Eastern District . . . $27.50@$28.00
Southern Territory $20.00@$23.00
Western and Central Districts . . . . . $23.00@$25.00

Wheels, Well—

8-in., $1.55; 10-in., $2.00; 12-in., $2.50; 14-in., $4.00.

Wire and Wire Goods—

Bright and Annealed:
6 to 9 80%
10 to 18 80&2½%
19 to 26 80&7½%
27 to 36 80&2½%
Galvanized:
6 to 9 75&5%
10 to 14 75&7½%
15 to 16 72½&10&2½%
19 to 26 75%
27 to 36 72½%
Coppered:
6 to 9 75&5%
10 to 14 75&7½%
15 to 18 72½&10&2½%
19 to 26 75&10&5%
27 to 36 75%
Tinned:
6 to 14 75&10&2½%
15 to 18 75&7½%
Annealed, Steel and Tinned, on Spools . . 70&10&10%@70&10&10&10%
Brass and Copper on Spools . . . 60&5%@60&10&5%
Brass, list Feb. 26, '96 . . . . . 15%
Copper, list Feb. 26, '96 . . . . . 25%
Cast Steel Wire 50%
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

List June 24, '03 . . . 90&25@90&30%
Brass Cup Hooks and Brass Screw Hooks . . . . . 85&10%

Wire Cloth and Netting—

Galvanized Wire Netting . . . . . 80&5@80&10%
Painted Screen Cloth, 100 ft., $1.10
Standard Galv. Hardware Grade:
Nos. 2, 2½ & 3 Mesh, sq. ft. 3¢
Nos. 4 and 5 Mesh, sq. ft. 3½¢
No. 6 Mesh, sq. ft. 3½¢
No. 8 Mesh, sq. ft. 4¢

Wire, Barb—See *Trade Report*

Wrenches—

Agricultural . . . . . 75&10&5@80%
Alligator or Crocodile . . 70&10@75%
Baxter Pattern S Wrenches . . . 70&5@70&10%
Drop Forged S . . . . . 45@45&5%
Acme 60&10%
Alligator Pattern 70%
Bull Dog 70%
Bemis & Call's:
Adjustable S 40%
Adjustable S Pipe 40%
Bemis Pipe 60%
Briggs Pattern 40%
Combination Black 40&5%
Combination Bright 40%
Merrick Pattern 50%
Boardman's 40%
Coes' Genuine Knife Hdl. 40&10&5&5%
Coes' Genuine Steel Hdl. 40&10&5&5%
Coes' Genuine Key Model. 40&10&5&5%
Coes', Genuine Hammer Handle . . . 40&10&5&5%
Coes' "Mechanics'" . . . 40&10&10&5&5%
Donohue's Engineer 40&10%
Eagle 50&10%
Elgin Wrenches, ₱ doz. $6.25
Elgin Rethreading Attachment, one die, ₱ doz. $6.25
Elgin Extra Dies, ₱ doz. $3.00
Elgin Extra Jaws, ₱ doz. $1.75
Elgin Monkey Wrench Pipe Jaws, ₱ doz. $2.10
Gem Pocket 5%
Hercules 70%
W. & B. Machinist:
Case lots 50&5%
Less than case lots 50%
Solid Handles, P., S. & W. . . 50&10@60
Stillson 65%
Vulcan Chain 50%

Fruit Jar—

Triumph Fruit Jar Wrench, 5 gross lots, ₱ gross, $7.50; ₱ doz. $0.80

Wringers—

Tuttle Roller Press Mop Pail Wringer, each, $8.00; ₱ doz. $48.00

Wrought Goods—

Staples, Hooks, &c., list March 17, '92 . . . . . 90@90&10%

Yokes, Neck—

Covert Saddlery Works, Trimmed 70%
Covert Saddlery Works, Neck Yoke Centers 70%

Yokes, Ox, and Ox Bows—

Fort Madison's Farmers' & Freighters' list net

Zinc—

Sheet . . . . . *per 100 lbs., $8.00@8.25*

For the Table of "Current Metal Prices" see the First Issue of Every Month.